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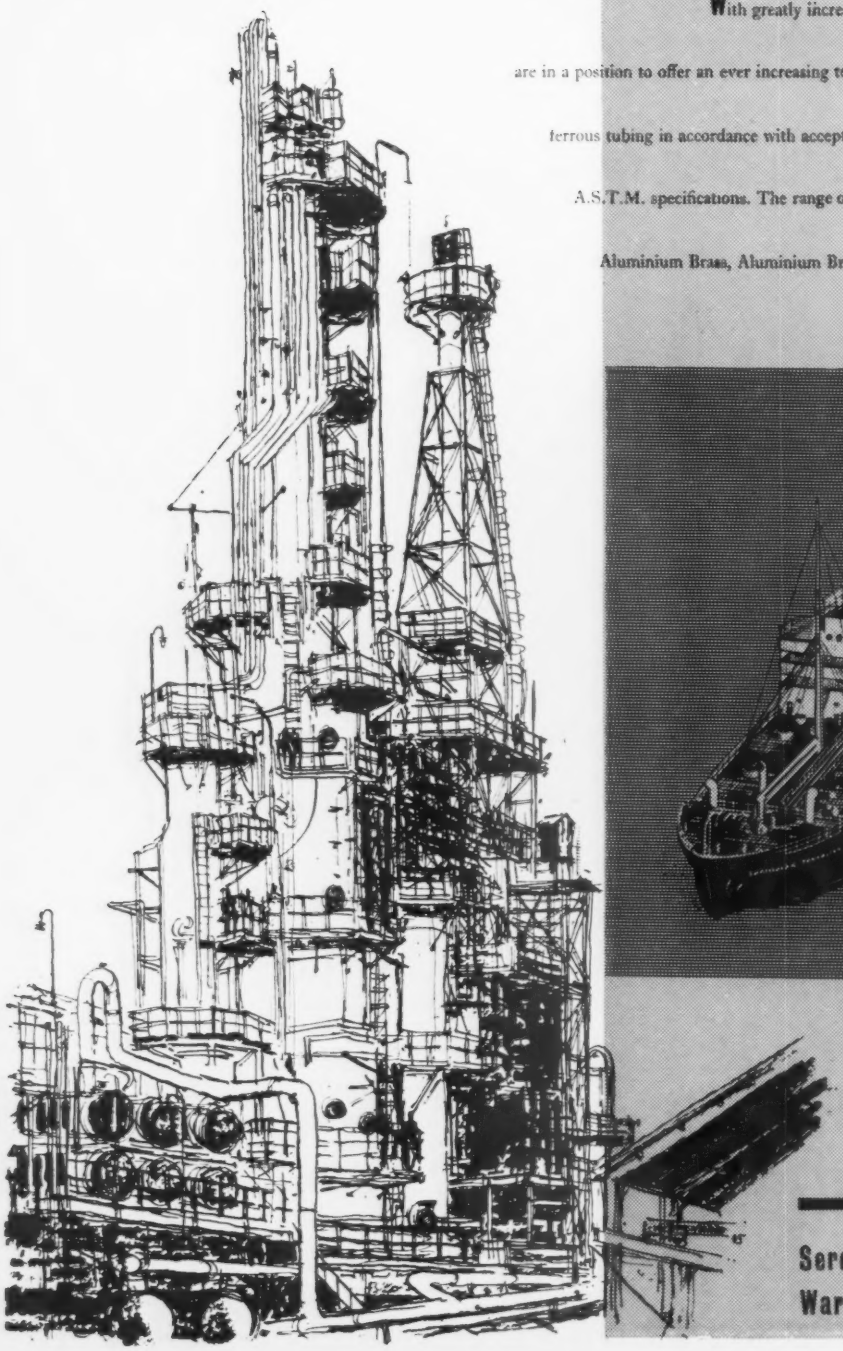

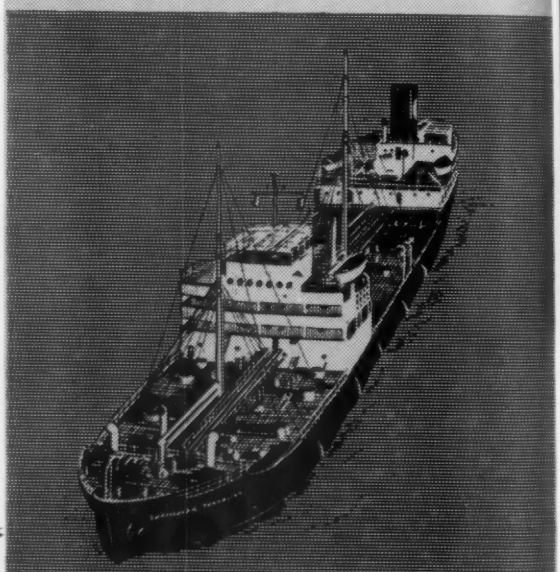

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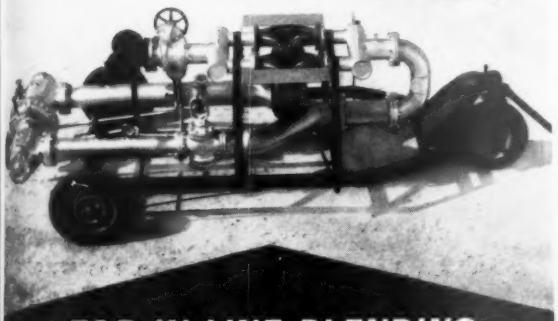

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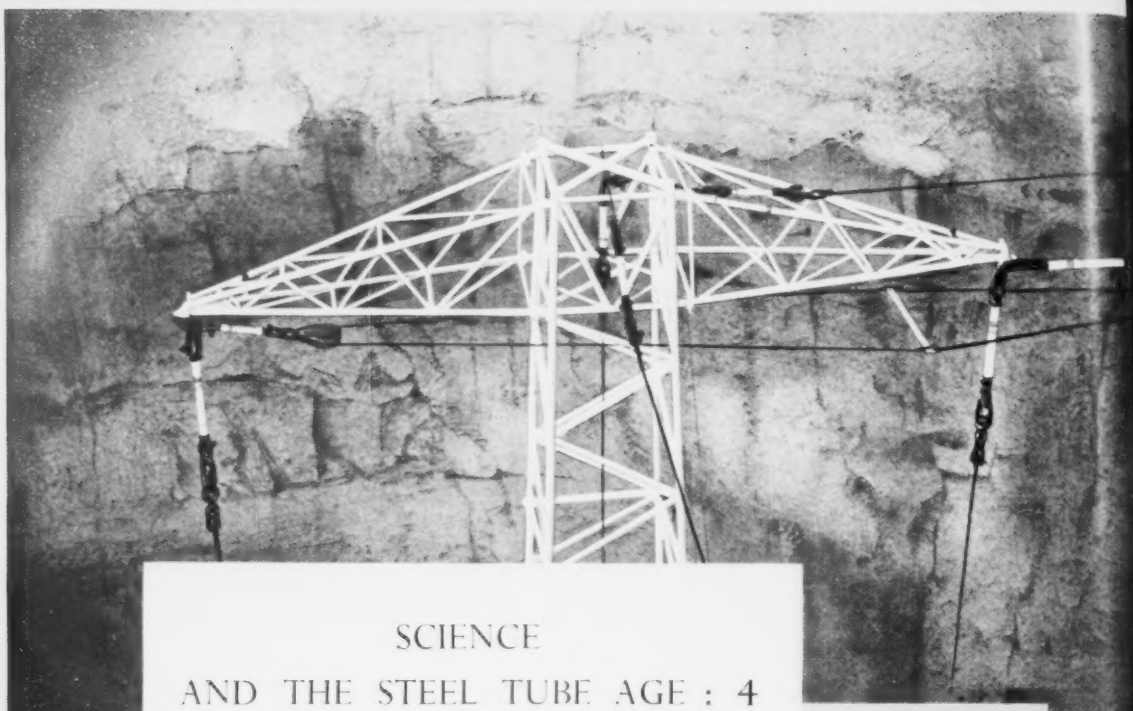

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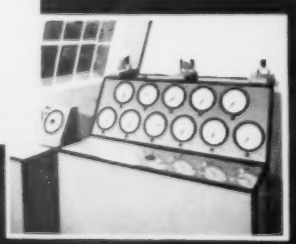

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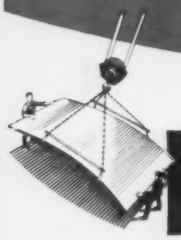

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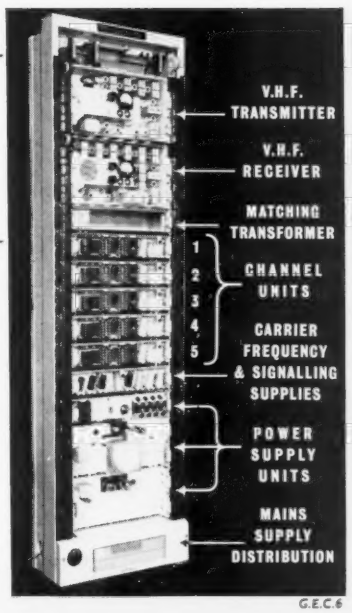

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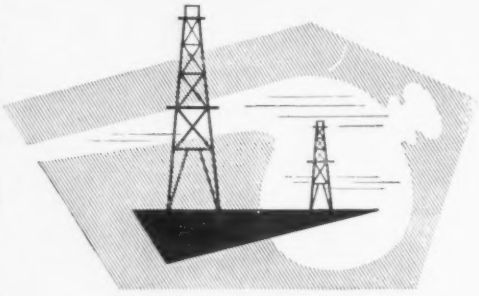

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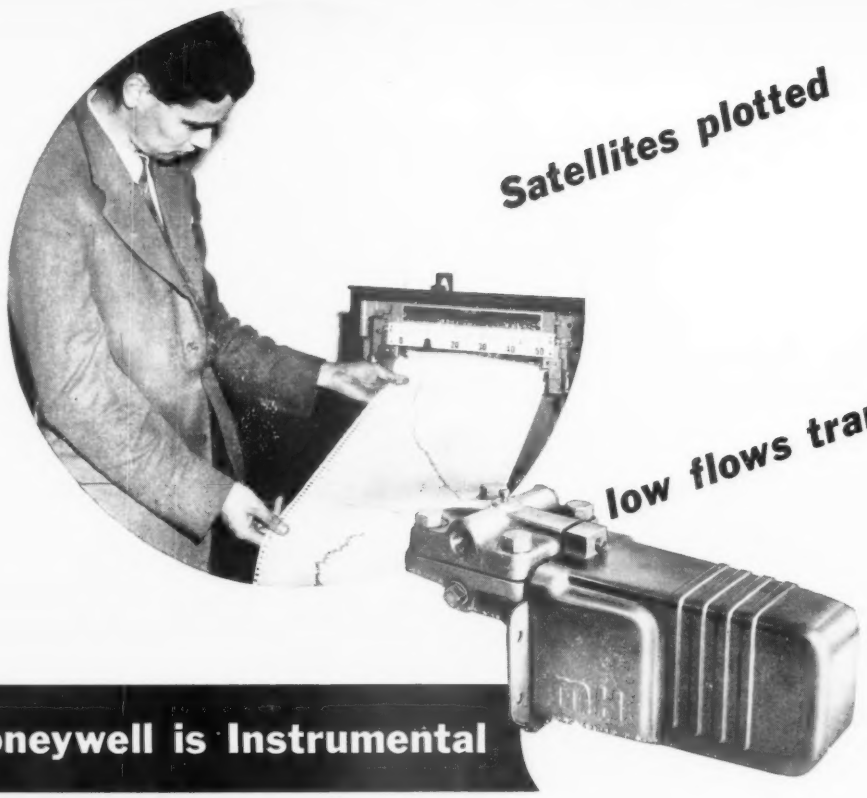

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THE INSTITUTE OF PETROLEUM

REVIEW

Volume 12, No. 136 April 1958

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The Annual Dinner

Each year the Annual Dinner of the Institute establishes a new record of attendance and, with a total of over fourteen hundred members and guests present, the 1958 function on 19 February was the largest ever. So full was the Great Hall at Grosvenor House that it is doubtful whether another diner could have been accommodated.

The dinner was presided over by the President, The Right Honourable Lord Geddes, C.B.E., D.L., the guests of honour being Sir Owen Wansbrough-Jones, K.B.E., C.B., Chief Scientist, Ministry of Supply, and Vice-Admiral N. E. Dalton, C.B. O.B.E., Engineer-in-Chief to the Fleet.

Official guests included: R. J. Ayres, C.B. C.B.E., *deputy secretary, Ministry of Power*; Colonel Tufton Beamish, M.C., M.P.; The Honourable M. R. Bridgeman, *chairman, Iranian Oil Participants Ltd*; L. M. Broadway, *deputy chairman and managing director, C. C. Wakefield & Co. Ltd*; Air Chief Marshal Sir Walter Dawson, K.C.B., C.B.E., D.S.O., *Air Member for Supply and Organization, The Air Ministry*; W. E. Eadie, *managing director, Burmah Oil Co. Ltd*; The Right Honourable Lord Godber, *chairman, The Shell Petroleum Co. Ltd*; F. E. Harmer, C.M.G.; Sir John Hathorn-Hall, G.C.M.G., D.S.O., O.B.E., M.C.; Professor L. Hawkes, *president, The Geological Society*; A. B. Lawrence, *managing director, Caltex (U.K.) Ltd*; H. A. Longdon, *president, Institution of Mining Engineers*; M. Milne-Watson, *chairman, The North Thames Gas Board*; H. W. Rocke, *chairman, The Oil Industries Club*; The Right Honourable The Viscount Simon, C.M.G., *president, The Chamber of Shipping*; Sir Leonard Sinclair, *chairman, Esso Petroleum Co. Ltd*; H. E. Snow, C.B.E., *managing director, British Petroleum Co. Ltd*; K. L. Stock, C.B., *Under-Secretary, Ministry of Power*; J. W. Swihart, *Petroleum Attaché, The United States Embassy, London*; H. C. Tett, *a managing director, Esso Petroleum Co. Ltd*; C. M. Vignoles, C.B.E., *managing director, Shell-Mex and B.P. Ltd*; H. Wilkinson, C.M.G., *a managing director, The Shell Petroleum Co. Ltd*; D. A. H. Wright, *Permanent Under-Secretary of State, The Foreign Office*.

Photos by Grosvenor House Studio

Lord Geddes, C.B.E., D.L., the President (right), *with the President-elect, C. M. Vignoles, C.B.E.*

The Members of Council of the Institute present were: (*past-presidents*) Colonel S. J. M. Auld, O.B.E., M.C., T. Dewhurst, E. A. Evans, Professor F. H. Garner, O.B.E., Sir Stephen Gibson, C.B.E., C. A. P. Southwell, C.B.E., M.C.; (*vice-presidents*) Dr E. B. Evans, A. C. Hartley, C.B.E., E. LeQ. Herbert, H. Hyams, R. B. Southall, C.B.E., E. J. Sturgess, C.B.E.; (*members of Council*) W. S. Ault, S. A. Berridge, V. Biske, A. H. Chatting, G. A. Dickins, F. L. Garton, A. J. Goodfellow, M. E. Hubbard, J. C. Jewell, E. C. Masterson, T. W. Mathias, O.B.E., J. S. Parker, Dr K. E. W. Ridler, A. J. Ruthven-Murray, C.M.G., D. L. Samuel, W. H. Thomas, Dr L. S. Thornes, G. H. Thornley, A. T. Wilford, Dr C. G. Williams, C. S. Windebank, J. C. Wood-Mallock; and G. H. Coxon (*honorary treasurer*).

THE INDUSTRY AND THE INSTITUTE

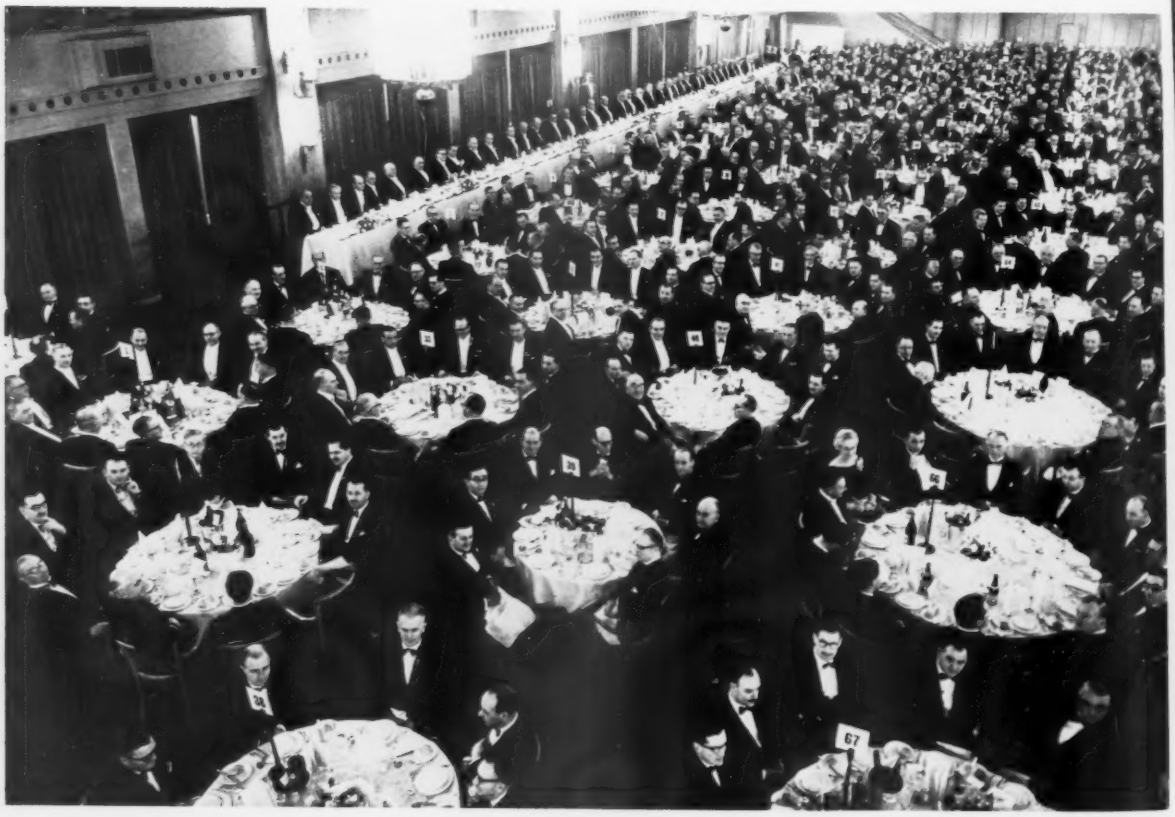
Sir Owen Wansbrough-Jones, K.B.E., C.B., Chief Scientist, Ministry of Supply, proposing the toast "The Petroleum Industry and The Institute of Petroleum", said:

It is near as may be one hundred years since the petroleum industry really came to life. The semi-decade 1855–1860 saw the sudden exploitation of the Pennsylvania oilfields, the products of which had been known to the Seneca Indians for many many years and which suddenly became news in the United States. It is due to my old friend Air Commodore Banks that I have in my possession a reprinted copy of Thomas Gale's little book *Rock Oil* which he describes as "The wonder of the 19th century" and it is stimulating as well as entertaining reading. Some of the chemistry is perhaps a little ropey and the use of italics to describe the excitement of a well so vast that it yielded "15 quarts per minute" with the remarks "A splendid thing is the Crossley Well!" "A diamond of the first water enough to make every son of Pennsylvania rejoice" indicates the fervour of the author though he does have to say later that, alas, "its oiliest days are past". I think this has had to be said on a different scale but with equal truth in other connexions.

But there are chapters in this little book that may still stimulate; that on oil discoveries indicates that the necessity for raising risk capital has always been with the petroleum industry, and a very good risk it has been. The very sensible study of the economics of it all varies, I believe, only in detail and scale from what is done now. The catalogue of uses is perhaps a little odd to the contemporary eye, but who knows how far cyclic changes may go. If there is one message that I would venture to give to the petroleum industry it is that they are certain to come and that they must, so far as is possible, be foreseen. It was probably within the personal knowledge of at least the grandfathers of people in this room how the whale oil industry, with all it entailed in harbourage and shipping, refining, and marketing, collapsed at Boston, as it were overnight.

The Uses of Oil

The uses, I stick to the priority given, advocated for rock oil are first its medicinal virtues. Applied externally "it penetrates, soothes and heals: every farmer should keep it. It has never been surpassed. It will cure if anything can". Internally it is regarded as specifically valuable for bronchitis and violent pains in the stomach. Next in order of importance is wool scouring. And the third is in preparing paint. Fourthly, it is regarded as superior to gas in railway cars, and with less confidence the author mentions the possibility of it being used as a fuel in steam engines, railways, ships, and even in place of coal to heat boilers. Fifthly, rock oil is held to be a good lubricator. And there are testimonials to its efficiency as confident as they are charmingly written. Even then the use of adjuvants, lard being highly commended, was considered of great value. But with its final use the author becomes panegyric—its use as an illuminator. "Never", he says, "does it cause the politician to weep" (though in parenthesis and realizing as a civil servant I do not discuss politics I should have thought that it had occasionally given them some cause



for anxiety). But he goes on to explain that he meant that the politician did not weep "when he reads at night in his favourite newspapers the victories of his own party", which is not after all a great testimonial.

I could quote to my own entertainment from this admirable book for much longer, but I want to make one point here on what has been said and one more later when I deal more with the Institute. The imagination that has always bubbled and still bubbles in the petroleum industry has as much cause now as ever it had to do its work. Diversification can only be carried out on a securely based industry and must be carried out while that industry is still solid and expanding, before it becomes static, let alone declining. There is no need for me to enumerate the ways in which the industry has diversified itself, conventionally by playing about with the molecules originally present to make better fuels specifically adapted to what is needed, conventionally also, I suppose, to find uses for what were waste products, slightly less conventionally in adapting its products as raw materials for other industries, the plastic industry, petrochemicals, insecticides, therapeutic substances, and so on. All these are well known and you can see what I meant when I recited Thomas Gale's order of uses and while I wonder to what extent the wheel will spin round, I know well that it will never come to rest.

Power Reserves

But essentially power is your business and it is in the realm of power with the rising of atomic energy that there must surely be coming the biggest changes. What you can do about it I do not know nor do I know what you are doing now. But I think there is one certain problem that we can see—the need for power storage. Your industry for years has been taking out the accumulated reserves of energy stored by physical, chemical, and biological processes at many millions of times the rate that they are put down. New reserves you will find will obviously extend their period of life. Now we are coming to the period when other reserves of power again become unlimited but we shall want to find means of storing it in off-peak times, and transporting it, not necessarily by cable, and I sometimes think that it is this field of research and development that is going to be most necessary and will, therefore, pay most handsomely to those who are successful in finding means of doing it. I am sure there is a big part for the petroleum industry who, I think, may have the raw products needed under their own hands in doing this.

There does seem to be some difference of opinion on the success of the oil industry in conducting its own research. In a fascinating book on the sources of invention, very lately published, there is discussed whether in your field true innovation comes more from the oil companies as industrial research organizations or from the private inventor. Galbraith, trying to clinch the argument, compared the oil industry, which he describes as oligopolistic and progressive, with the bituminous coalmining industry, competitive and backward. Frankel, in 1946, said that "looking back dispassionately we may find that the major oil companies mainly took up and developed ideas which were brought to them by men who did not in the first instance belong to their own

Lord Godber, H. Wilkinson, C.M.G., and the President

team". Whether you oligopolists have allowed this situation to persist through the last decade I do not know but perhaps you cannot afford to allow it to do so through the next. On the other hand, the development of the idea in your hands may be the most important factor and this development the oil industry certainly has done.

This brings me on to the Institute of Petroleum, the crest of which portrays, as you all know, an Archaeopteryx. The symbolism of this is not, of course, either its prehistoric nature or the extinct condition of this remarkable bird. But it does call to mind Ogden Nash's lines—

> *Consider the auk;*
> *Becoming extinct because he forgot how to fly, and could only walk.*
> *Consider man, who may well become extinct*
> *Because he forgot how to walk and learned how to fly before he thinked.*

IP Strength in Diversification

I should have said that the principal task of the Institute is to see the people in the petroleum industry not only do think but are equipped to do so. The Institute's wide range of interests and its attempts to bring together as many different interests and disciplines as are associated with your industry is to my mind far-seeing. Strength in these modern days comes, I am sure, not just from diversification of output of products but also, and very much so, from diversification of approach. In parenthesis this is one reason why I most thoroughly believe that the technical part of my own Ministry, the Ministry of Supply, can be so strong. It can bring to bear on a single problem such a wide range of scientific and engineering approaches with expert knowledge of them all.

I understand it to be one of the main functions of the Institute to bring together not just petroleum technologists, but also the economists, the operational research workers and the management consultants, transport executives, drilling equipment manufacturers, and all the different sorts of scientists who serve it. This to me is an admirable objective and to its success in this task, current and future, we shall soon all be drinking.

Need for Intelligence

I said I had another message and it really is this. It is the need for the highest intelligence in big industry to-day, which intelligence is not only to be found, as was once thought, amongst the arts and classical students (though it is on record at the Cambridge University Appointments Board, and to me it is encouraging, that one great oil company was the first technological group specifically to ask for classical scholars to enter their organization). Nor is the highest intelligence to be found only amongst technologists: I would only say that it can be found there in very high degree and not just technological ability, but also a great deal of general administrative ability. For years the industry has, I believe, been making as good use of the intelligence it has within it as any other organization, and I believe it is nearly as true to say that the chronic shortage in this and every other country of true management and technological ability arises at least as much from misuse of the best qualified as it does from any true shortage. National steps are now being taken, late but not too late, to remedy the shortage. National steps cannot remedy misuse; that must be left to the organizations. It is a part of personnel management in which again I think your industry has a deservedly high reputation.

The outsider, the casual reader of the papers, may think that oil men are gamblers by instinct. The oil industry has got where it is by being intelligent, not by gambling or by playing hunches. There was, to me, a rather fascinating small contribution in *Nature* about a fortnight ago, from Dr Dale, a psychologist, who has studied the relationship between three things—intelligence, accuracy of hunches, and willingness to use hunches rather than intelligence, that is, to gamble. There is, he finds, no correlation between the accuracy of the hunch and any level of intelligence, high or low. Apart from extra-sensory perception, your guess is as good as mine on my business, mine as good as yours on yours. But where intelligence shows up is that those of higher intellectual quality do not prefer subjective guesswork to a systematic objective approach. In fact they do not play hunches. You, I believe, have not gambled; you have tried to use a systematic objective approach and when things have gone wrong it was through lack of facts, not your own inability to deploy and use them. This, I think, is what you have always done, and what you will certainly have to do as much in the future as you do now. The work of the Institute should help in this direction.

E. LeQ. Herbert (a vice-president), T. Dewhurst (a past-president), H. Hyams (a vice-president), and Colonel S. J. M. Auld (a past-president)

In fact the egg-heads of the world, rightly praised by the Lord President at the Royal Society Anniversary Dinner, are the people you want. I am myself avowedly an oocephalophile, which I probably need not translate having already praised the industry for its approach to the classical scholar. But it does of course mean a lover of egg-heads. Let them be cherished, and let them be used. But this does require that every possible means be used of bringing them into contact with their own kind, but of slightly different ovoidity, and this I believe is just what the Institute sets out to do. It does involve good libraries, which the Institute has; agreeable, indeed beautiful surroundings, which the Institute has just acquired; and it does involve an approach towards the merging of attainments which is one of the Institute's main aims.

The President Responds

Responding to the toast, which was received with acclamation, the Rt Hon. Lord Geddes, C.B.E., D.L., President, said:

As far as The Institute of Petroleum is concerned, it is easier this year than usual to record progress without the use of statistics. Last year I referred to the preparations for the move into our new building, a move which culminated in November in the official opening ceremony which was kindly performed by Lord Mills. In that new building the Institute has taken on a new lease of life, and has room to expand and to improve still further the service which it gives to its members and to the industry. I would like once again to express the gratitude of the Institute to all those members and member companies whose generous contributions have made this possible. I hope that members of the Institute will visit and make increasing use of this headquarters building. I should like at this time particularly to thank both our general secretary, D. A. Hough, and all members of the staff for the hard and dirty work, and often long hours, which they put in to complete the move.

The Branches

The membership of the Institute continues to grow, and new records are set only to be surpassed with almost monotonous regularity. There is, however, one aspect of its activities upon which I would like to dwell for a few minutes, and that is what is being done by our Branches. These fall into two main categories, home and overseas. The home branches, of which there are now eight and which represent rather more than half the membership, flourish as active centres of both scientific and social exchange. It is, however, of the work of the overseas branches that I particularly wish to speak this evening.

The President welcomes the honorary treasurer, G. H. Coxon

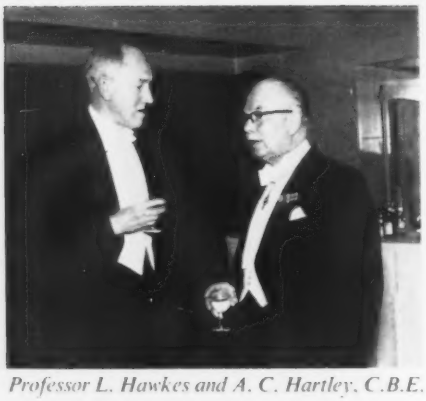
H. E. Snow, C.B.E., with the President and H. Wilkinson, C.M.G.

Last week I returned to Britain from a journey which started at the Mediterranean end of the pipelines and continued north to Kirkuk and gradually southwards to Qatar, and then proceeded eastwards to Burma and the Far East. In the course of this journey I had opportunities to attend and to speak at meetings of the Branches in Kuwait and in Bahrain, and to provide impetus which I hope will result in the establishment of a new branch in Iraq, and the revival of the branch in Burma, where one of our first overseas branches was formed.

It was both impressive and gratifying to see the work done by these Branches and the efficiency with which they are run. It takes a great deal of time and effort, by a large number of men, to run the branch affairs so smoothly, and amid all the strain and bustle of modern business, it is remarkable that so many of our members are prepared to devote their spare time, so gladly and willingly, to the activities of the Institute.

An Institute such as this, which has grown to meet a scientific demand, is firstly democratic in that almost literally the office boy can be at the top with the managing director in the body of the kirk. More important than this, however, is the fact that such an Institute is bound by neither company nor national frontiers, and in it the men and women of the industry have shown once more how easy it is for people who are different in race, creed, and colour to work harmoniously together when they have a common objective. During my journey I realized increasingly the importance of the part which such an organization can play in the broad field of foreign relations and indeed it seems to me that it is in organizations such as this, sometimes perhaps even more than in the more formal international bodies, that there lies the real hope for international understanding in the future.

There is no doubt that the Headquarters should remain in London, not so much because this is a British Institute, but rather because London is and will remain one of the principal cross-roads of the oil industry. I do believe, however, that



Professor L. Hawkes and A. C. Hartley, C.B.E.

such a body as this can and should acquire a more international character, and that from it and from others like it there will grow international friendships far beyond their own technical field.

One strong impression of my journey was that our name as a nation stands high in the East and that our historic friendships there are as strong as they ever were.

Tanker Building in Japan

I would like now to speak of the second part of the journey to which I have referred. From Burma I went to Japan and wish to say something of the visits which I paid to a number of Japanese shipyards. The oil industry has become one of the largest customers of the shipbuilders of the world, and though many companies still incline to build their ships where they have always built them, that situation can only last so long as prices remain reasonably competitive. What I saw in Japan left me in no doubt that many of the shipbuilders of Europe and of Britain are no longer competitive. Japan is now the biggest shipbuilding nation in the world. I saw 40,000-ton tankers being turned out in four months from keel to delivery, and 85,000 tonners in only 5 or 6 months. Excellent ships and at prices very considerably below those obtainable in some European yards. These facts are often dismissed either on the score of low wages or inferior ships. The former may be partly true, but the latter not at all. They are building good ships, and the fact is that in the shipbuilding industry of Europe, including Britain, both management and labour will have to tighten its belt if it is to survive in the face of that competition.

There is never a time when the oil industry is not faced with worries, and indeed there is seldom a time when there is not in some part of the world what appears to be a critical situation. To-day, contrary to all the forecasts, the expected rise in consumption has not materialized; production and refinery runs are being curtailed, and good ships are to be seen in many ports of the world swinging unemployed at their anchors.

Let us look back, however, to the situation as it stood a year ago. The Suez Canal was closed, the industry was under great strain in trying to maintain essential supplies, petrol was rationed, but far more serious, we and our friends across the Atlantic were scowling at each other. Memories are short and even now it is not easy to recall the atmosphere of that time. By one means or another those difficulties were overcome, and while it is true that new problems have taken their place, we can be confident that these also are capable of solution. Above all, it is not unfair to say that both within itself, and through the friendly channels of Government, the international atmosphere of the oil industry is immeasurably better than was the case twelve months ago.

THE GUESTS

Proposing the toast "The Guests", Lord Geddes said:

The Institute is above all not a political organization, and partly in order to emphasize this, and partly because foreign affairs are so important to the industry, we were hoping to have with us this evening both Her Majesty's principal Secretary of State for Foreign Affairs, the Rt Hon. Selwyn Lloyd, and in the absence of Aneurin Bevan, Alfred Robens. Unfortunately for us, foreign affairs is this evening a matter of discussion in another place, and at the last minute we have been disappointed that neither of them were able to tear themselves away from their responsibilities there.

I would like to welcome particularly Vice-Admiral Dalton who has succeeded to the eminent position of Engineer-in-Chief of the Fleet. Admiral Dalton has paid most particular attention to the petroleum requirements of the Navy, and we can be confident that the good relations between the petroleum industry and the Royal Navy will be maintained under his leadership.

I would also particularly like to welcome Air Chief Marshal Sir Walter Dawson, the Air Member for Supply and Organization, and the Rt Hon The Viscount Simon, the President of the Chamber of Shipping, and to congratulate him on his recent appointment to the high office of chairman of the Port of London Authority.

We also have with us two who agreed to become members of the Institute before its foundation in 1913—A. E. Chambers and T. Dewhurst.

I will not mention individually the eminent representatives of the oil companies who are with us tonight, but I would like particularly to say how glad we are to see so many of them, and so many of the senior members of the Government departments with whom the oil industry is in constant touch. To them and to all our guests I would say welcome from the Institute, and would ask all of the Institute to be upstanding and to drink with me, the Toast of our Guests.

Vice-Admiral N. E. Dalton, C.B., O.B.E., Engineer-in-Chief to the Fleet, first expressed the thanks of all the guests for the hospitality extended to them. He had been interested,

E. J. Sturgess, C.B.E., a vice-president, with the President

he said, in what had been mentioned in regard to shipbuilding in Japan. What enabled the Japanese to build ships so cheaply and so well? Neither wages nor materials were so much lower in cost and he suggested it was due to planning and organization, both of which saved money later. He hoped that European countries would follow suit.

The advent of nuclear propulsion would not lessen the Navy's requirements of oil in the foreseeable future and he expected that the world would continue to use petroleum products for as long as it was economically reasonable to extract and refine the crude oil.

The Navy had many problems in connexion with fuel and lubricating oils. Fuel oils must be stored in a wide range of climatic conditions, and often for long periods, and they must be readily pumpable in those conditions. They were, therefore, concerned with their properties at low temperatures and after long standing.

In the combustion field, they were vitally interested in high heat release rates, since the size of a boiler furnace was one of the factors controlling the size and weight of boilers.

Another problem, said Vice-Admiral Dalton, was the emulsification of oils. The old adage said that oil and water would not mix, but it was far more true that, having mixed, they were most reluctant to unmix themselves. Sea water and oil could form emulsions most embarrassing to pump or burn. The Royal Navy must be prepared to use oil from any source in the world, so the problem of compatibility of oils from various sources also concerned them.

To resolve their many problems and to develop specifications and significant yet practicable test methods, they had the Admiralty Fuels and Lubricants Committee, many of whose members were members of the Institute and its Panels. Often there had been disagreement and argument, a healthy sign when conducted in a friendly and co-operative spirit. They had learned a lot from the IP, and he hoped that this happy relationship would long continue.

Oil in Canada—Progress, Production, and Prospects

Five years ago, in 1953, for the first time in the history of Canada, oil overtook coal in providing the greatest share of the nation's energy consumption by primary sources. This significant fact emerges from a table covering the years 1946 to 1955 which forms part of an article by John Davis, director of research and planning, British Columbia Electric Power Co. Ltd. The article appears in the *Financial Times Survey of Canada*, which has recently been published.

In 1953 oil accounted for 42·5 per cent of consumption, measured in thermal units, which was 3·7 per cent above that of coal. Only two years later, however, the gap had more than tripled when coal had declined to 31·4 per cent and oil had risen to 49·1 per cent. This trend against coal is expected to continue and intensify. By 1980 it is estimated that more than two-thirds of the nation's energy needs will be supplied by two fuels—oil with 45 per cent, and natural gas with 25 per cent. It is not anticipated that by that year nuclear energy will make a large contribution; the estimate for that source is only 2 per cent of total requirements.

A great impetus to the striking advance made by oil was undoubtedly provided by the discovery of indigenous oil in the Province of Alberta in 1947. Even three years later, in 1950, three-quarters of the crude oil consumed came from Venezuela, the Middle East, and California. In the past five years the picture has greatly changed and petroleum products have now become not only the main source of energy but also a leading source of mineral wealth.

The astonishing progress in exploration and exploitation is examined by J. W. Proctor, general manager, Canadian Petroleum Association, in an article dealing with the Canadian oilfields. In the decade that ended December 1956 crude production showed the stupendous increase of nearly 30 times, from 20,000 to 530,000 b.d. Potential production, if markets were accessible, would soar from 20,000 to 900,000 b.d. Proved reserves of liquid hydrocarbons skyrocketed from 70 million to 3300 million barrels.

In order to achieve such spectacular increases much capital was essential and it has been estimated that $3800 million has been poured into the industry during the past decade. The industry's current expenditure is now put at $1·5 million daily compared with $1 million per month in 1946.

Crude oil production in 1956 totalled 171·9 million barrels, and in 1957 surged ahead to 182·1 million barrels it is estimated.

The most prolific oilfield area was Alberta, which provided 83 per cent of the 1956 output, and has approximately 90 producing fields. The oil, which is of good quality, comes both from reef and sand formations. The discovery of Leduc led to the discovery of many other fields, including Pembina, now one of the largest producing fields in the North American Continent.

Saskatchewan, which did not become an oil-producing area until 1944, now ranks second in the output figures with a 1956 total of 21·0 million barrels, and an estimate of 36·5 million for 1957. Nearly forty years of prospecting preceded discovery of oil in commercial quantities in this area.

Manitoba is the third greatest producer in Canada, with a total in 1956 of 5·7 million barrels. Approximately twelve fields have been developed in this area, and their yield in 1957 was expected to reach 6·1 million barrels.

It has been estimated that by 1980 Canada will be supplying more than 90 per cent of her crude oil requirements, but costs of exploration and development will absorb an investment of some $25,000 million.

The Markets for Canadian Oil

After 10 years of expanding markets, a trend towards slower progress in market demand became apparent towards the end of 1957. This was shown most graphically in exports to the U.S.A., during the last four or five months of the year. Tanker shipments to California refineries which had averaged 35,000 b.d. in the first half of 1957 were completely cut off from August on, and the Puget Sound market of north-western U.S.A., Canada's leading export outlet, declined to about 55,000 b.d. during the last quarter. Although export markets are a little duller than last year domestic demands are bright. W. M. V. Ash, president of Shell Oil Co. of Canada, has predicted that the domestic market for oil will virtually double in 8 years to about 1·4 million b.d., and about 1 million barrels would be supplied by Canadian producers.

Natural Gas

In the past decade, by doubling its share of energy consumption in Canada, the natural gas industry has become of national importance. Charles S. Coates, president of Trans-Canada Pipe Lines Ltd, surveys the progress of the industry in an article that recalls that Canada has used natural gas commercially for many years, but until recently only in industries close to the place where it has been discovered.

In the ten years since 1947 reserves of natural gas in Western Canada have increased to an estimated 27,000,000 m cu. ft, with more than 20,000,000 m in Alberta alone, and this stockpile is being added to at the rate of 2–3,000,000 m cu. ft year. On the average 1,000,000 m cu. ft meets the needs of homes and industries in a city of 1 million population for 25 years so there is likely to be more than enough available for many years to come.

Alberta has granted a permit to Trans-Canada Pipe Lines to export 4,350,000 m cu. ft of natural gas and the Canadian Government has approved construction of a 2290-mile transmission to serve markets all the way from Alberta to Montreal, Quebec. Sufficient reserves remain to allow export in limited quantities to the mid-western United States. A contract had been drawn up to supply 200 million cu. ft daily to the United States and the Federal Power Commission in Washington was considering this importation.

Refinery Capacity

There are now more than 40 refineries in Canada which in 1957 were fed by 128·4 million brl of indigenous production, 82 million from Venezuela, 15 million from the Near and Middle East, 10 million from the United States, and 1·5 million from Trinidad. The Dominion has the largest refining industry of any country in the free world, outside U.S.A. Capacity was raised by about 100,000 b.d. in 195[illegible] and further increases are planned.

Two important developments in the Toronto area were the expansion of British American Oil's plant at Clarkson, and of Regent Refining's Port Credit refinery. Crude distillation capacity at Clarkson rose by 40,500 b.d. and that at Port Credit by 6000 b.d. Another expansion is that of the Canadian Oil Companies' Sarnia refinery where capacity is to be raised from 30,000 to 50,000 b.d. by 1961. Near Toronto, Cities Service—a leading U.S. company—is spending $27 million on a 20,000 b.d. plant for completion in about 1 year's time. Shell Oil of Canada is also expected to build a large refinery in that area.

The four largest companies in the industry, Imperial Oil, Shell Oil, British American, and McColl-Frontenac all have major plants in the Montreal area where demand prospects are particularly good.

British Petroleum, which now operates more than 80 service stations in Quebec, projects construction of a $30 million refinery with a capacity of 30,000 b.d. This will also provide another outlet for BP's reserves of Middle East Oil.

Several new plants are planned for Western Canada, especially on the west coast. Plans for the west coasts both of Canada and U.S.A. will provide as large an outlet for Canadian crude as the current refinery expansion in Ontario. A 20,000 b.d. refinery for British American at Vancouver is expected to come on stream by the end of this year.

An American Oil Man Looks Abroad

At the 37th Annual Meeting of the American Petroleum Institute, held in Chicago last November, A. L. Nickerson, president, Socony Mobil Oil Co. Inc., New York, spoke on the subject "An American Oil Man Looks Abroad."

Some of the points he made are included in the following account.

Mr Nickerson averred that every producing company faced one central economic question as to where to invest each dollar most profitably in the search for and the production of oil. Socony Mobil invested most of its capital in the United States, but difficulties of finding oil in the U.S.A. were increasing and some companies that formerly confined their efforts to the States were now investing elsewhere.

Four factors tended to influence American companies to keep investment in the United States. The first was safety. A company could be sure that investment would not be expropriated, destroyed in war, or by political upheavals. In foreign countries also more Government red tape was often encountered.

Secondly, in the United States there was the opportunity to deal, for the most part, with private individuals in negotiating mineral rights, which allowed more equality of procedure than with governments.

Thirdly, there was convenience of distribution of products. A ready market existed in the United States and facilities for communication and transport were good. Development expenses also tended to be lower.

The fourth factor was the wide range of long-standing interests that companies had built up in America.

In regard to investment abroad the most telling argument was that there were more unexplored and untested areas that looked geologically attractive outside the U.S.A., and a subsidiary factor was the increasing costs of finding oil within the U.S.A.

To illustrate his theme, Mr Nickerson took examples from his own Company, Socony Mobil Oil Co. In nearly every case the Company's oil search abroad had been dictated by the desire to have an assured supply of crude for their own overseas marketing activities. Before the first world war the Company was exploring in Poland. This was resumed after the war and activities were extended to Germany, Austria, and Spain. Nevertheless, in 40 years of prospecting in Europe insufficient oil had been discovered to supply the local needs of the Company's marketing outlets.

After the first world war the U.S. Secretary of State asked companies to join European interests in what had been the Turkish Empire in the Middle East. This enterprise became the Iraq Petroleum Company, and of the 14 American companies that first expressed their willingness, only five joined the venture. Only two, Socony and Standard of New Jersey, remained until the present day. It was more than 25 years before an adequate return on capital investment was secured.

After the second world war Socony Mobil sought expansion

in the Middle East. The Company acquired an interest in the Arabian American Oil Company, became a member of the consortium in Iran, and made long-term contracts for supply of crude from Kuwait. Of the Middle East supplies in 1956 94 per cent went to the Eastern Hemisphere.

In the Far East the Company's interests went back to before the turn of the century but these markets were first supplied from the United States. In 1933 Jersey and Socony formed the jointly owned Standard Vacuum Oil Co. to handle business in that area. Stanvac suffered severely during the war. Its producing fields and many of its markets were over-run, and investment in that area had brought only a moderate return. In fact, investment abroad inevitably entailed losses, and market development charges had also to be faced. These required time, experience, and capital.

In regard to crude oil imports to the States there were several points to be considered. Consumption of natural gas was one factor in the tightly restricted producing schedules. During the past 15 years such consumption had tripled, and in terms of B.t.u.'s was now supplying 26 per cent of the nation's energy. The increase in natural gas consumption in 1957 compared with the figure for 1947 was equivalent, in terms of energy content, to almost 3 million b.d. of oil.

The coal industry has also shown signs of revival and production, after declining for 10 years, had now levelled off.

A third factor was the milder weather. All these influenced production levels of oil, but Mr Nickerson doubted whether the domestic oil industry would be able to meet the whole future demand, if imports remained restricted.

In 1967 it was estimated that the country would be using 40 per cent more oil than in 1957. If this was fulfilled, American producers would have to find annually by that date 4 billion barrels of crude to maintain the present ratio of reserves to production.

Although current opinion might favour import restrictions, future considerations should be borne in mind. Continuation of such restrictions would tend to raise prices above competitive limits. There might also be competition from the shale-oil industry, which had reserves estimated at 100 billion barrels, if subsidy, tariff, or quota protection was given to the industry.

Imports were also necessary to maintain good relations with overseas producing areas; America should not retain access to foreign oil on an on-again-off-again basis to suit her own convenience. Furthermore, if Congress granted tariff protection to the domestic industry, this might lead to additional legislative restriction.

Mr Nickerson in conclusion thought that import restriction was a short-term measure which growth of demand would make obsolete.

FIFTH WORLD PETROLEUM CONGRESS

Exhibition of Petroleum Equipment

About six months ago the Permanent Council of the World Petroleum Congress approved the suggestions of the American Organizing Committee that, in view of the very large building that had been rented for the Congress, an Exhibition should be staged on two of the floors of the Coliseum Building during the period of the Congress.

It was envisaged that this exhibition would be devoted to showing the progress made, over the hundred years that have elapsed since the drilling of Drake's well, of every type of equipment used in the various aspects of the oil industry.

However, many oil companies in the U.S.A., who are actively supporting the Congress, have expressed a keen interest in the exhibition, and it has now been agreed that the scope of this exhibition should be increased to allow any oil company to exhibit, if they so desired, providing the exhibit was of an educational or historical nature or showing examples of the benefits that oil has brought to mankind in general. No exhibits of any products of petroleum or petrochemicals that are sold direct to the public will be acceptable.

If any company in Britain is desirous of obtaining details of this exhibition, with a view to taking space, (the charge is $5 per square foot), the Secretary of the British National Committee, at the Institute of Petroleum, will forward their name to the U.S. Organizing Committee who will arrange for all details to be sent from the International Exposition Company who are managing the exhibition.

No obligation of any sort is involved in such enquiry.

PROTECTION AGAINST CORROSION IN THE PETROLEUM INDUSTRY

A course of six lectures, under the general title of "Protection against Corrosion in the Petroleum Industry", will be held on 16, 17, and 18 April, from 9.30 a.m. to 5.30 p.m. at Sir John Cass College, Jewry Street, Aldgate, London, E.C.3.

The first lecture will be by Dr H. B. Footner, of Shell Petroleum Co. Ltd, who is also the chairman throughout the course. His subject is "Protection against Atmospheric Corrosion" and he will deal with the causes, types of protective materials used, preparation of surfaces for painting, and painting processes and techniques.

The second lecture, in the afternoon of 16 April, is by J. Rogers, also of Shell Petroleum Co. Ltd. He will speak on "Internal Protection of Pipelines, Tanks, and Containers".

On the following day, K. Fleming and E. V. Mathias, both of Shell Tankers Ltd, will consider "Corrosion in Tankers and its Prevention". This will cover the problem of corrosion in the cargo spaces of petroleum tankers, together with methods and experience of controlling it. The authors will also deal with external hull corrosion, its causes, effects, and prevention.

H. James, Esso Petroleum Co. Ltd, is to speak on "Process Plant Corrosion and its Prevention". He will pay special attention to erosion and hydrogen blistering in fluid catalytic cracking units, and problems arising in chemical treating plants.

The final lecture in the course is by E. D. Dolan, British Petroleum Co. Ltd, whose subject is "Corrosion in Cooling Water Systems". He will consider aggressive cooling waters, condensers, types of failure of tubes and channels ends and methods of protection. His paper will also embrace protective measures against corrosion in pumps, pipework, and valves.

The fee for the course is £3 and applications for enrolment should be made to the Secretary, Sir John Cass College, Jewry Street, London, E.C.3.

Extensions at Isle of Grain

A general view showing (left to right) *the C_3–C_4 splitter, the No. 2 stabilizer unit, the* isopentane *unit, and the No. 1 stabilizer unit*

Expansion projects at the Isle of Grain refinery of BP Refinery (Kent) Ltd, which are scheduled for completion this year, are designed to make the refinery one of the most modern in Europe, and are estimated to cost £30 million. The main objects of this expansion are not only to increase the output of all products but also to provide for the manufacture of aviation spirit. Until 1951 the main source of aviation spirit for the BP organization, of which BP Refinery (Kent) Ltd is a wholly-owned subsidiary, was the large aviation spirit plant in the Abadan refinery. Under the Consortium Agreement of 1954, BP could rely only upon 40 per cent of the output of that plant. Therefore, with the demand for aviation spirit likely to remain at a high level for many years, the new facilities at the Isle of Grain will be of great value.

History

Work on the Isle of Grain refinery was commenced in 1950, and in February 1953 the first stage was completed. This marked the commissioning of a crude distillation unit, a stabilizer, and sweetening and blending plants. These plants permitted the production of motor spirit, tractor vaporizing oil, kerosine, gas oil and diesel fuel, and fuel oils.

Eight months later, the commissioning of a vacuum unit, a catalytic cracker, and an SO_2-extraction unit, completed stage two. These plants made possible the manufacture of premium grades of motor spirit and of kerosine.

By May 1954 the third stage, allowing lubricating oils to be refined, was brought into operation. The plants completed included a vacuum unit, a propane de-asphalting unit, a furfural unit, an MEK solvent dewaxing unit, clay treating plant, and packaging and blending plant. From ten basic grades it became possible to prepare over 400 lubricating oil blends.

Thirteen months later, in May 1955, a platformer was commissioned and provided means of manufacturing a super grade of motor spirit.

Originally the refinery was intended to serve the U.K. market in the London and south-eastern counties area and to export supplies to North-West Europe. Provision was made for expansion at the appropriate time. With the ever-increasing demand for petroleum products in Europe, and particularly for fuel oil, the need for the present extensions became apparent and details of the new plants follow.

Expansion

The major extensions now in progress at the Kent refinery started in 1956 and, when completed, will comprise twenty-one processing units, twenty new or extended pump-houses, four new boilers, one turbo-generator, and two oil-water separators. Total area occupied has been increased by 450 acres to 1136 acres, 5¼ miles of new roads make the total 27¼ miles, and four new jetties make eleven in all. One existing jetty has been extended. A total of 122 new large tanks, including fixed roof and floating roof types and Horton-spheres, will have been built, the largest being 144 ft in diameter and 60 ft in height.

The expansion has involved the laying of an additional 200 miles of above-ground pipelines, making 800 miles in all, and new underground lines of up to 99 inches internal diameter. Fresh water requirements will be increased from 40,000 to 75,000 gallons per hour and a fifth 1½ million gallons per hour pump for cooling water and effluent has been added. Seven new electrical substations have been installed and extensions have been made to eight existing ones.

The work of expansion has involved the laying of additional pipelines for cooling water

The twenty-one new processing units are as follows:—

Crude distillation unit.—Capacity 90,000 b.s.d, complete with side-stream soda washeries, for handling increased crude throughputs. Supplied by E. B. Badger & Sons. This unit was put on stream at the end of February.

Stabilizer.—Supplied by Power-Gas Corporation Ltd for treatment of light gasoline. Capacity, 12,000 b.s.d.

Isopentane unit.—A 900-b.s.d. E. B. Badger unit for production of isopentane for aviation spirit blending.

Hydrofiners.—For the desulphurization of gas oil, two 10,000-b.s.d. units by Kellogg International Corporation.

Thermal reformers.—A 12,000-b.s.d. Kellogg unit for manufacture of reformed spirit and feedstock for alkylation plant.

Catalytic reformer.—For the production of high-grade motor and aviation spirit components. A 10,000-b.s.d. unit by Kellogg and Universal Oil Products Co.

Depropanizer.—An E. B. Badger unit of 2500-b.s.d. capacity for separation of alkylation feedstock from catalytic reformer products.

Alkylation plant.—A Lummus 2250-b.s.d. unit for manufacture of aviation spirit component.

Udex plant.—Extraction plant for preparation of aviation spirit aromatic component. Capacity, 500 b.s.d. By E. B. Badger & Sons and Universal Oil Products Co.

Copper chloride units.—Two 8000-b.s.d. W. J. Fraser & Co. units to provide extra capacity for product sweetening.

Solutizer units.—Two 2000-b.s.d. butane units for desulphurization of alkylation feedstock, and one 4000-b.s.d. unit for treatment of motor spirit. All supplied by W. J. Fraser & Co. Ltd.

Acid washeries.—One 900-b.s.d. unit for sweetening isopentane for aviation spirit and one 8000-b.s.d. unit for treating kerosine and aviation turbine fuels. Supplied by E. B. Badger & Sons.

Absorption towers.—A Kellogg unit for the existing catalytic cracker to remove hydrogen sulphide from sour gases for sulphur production.

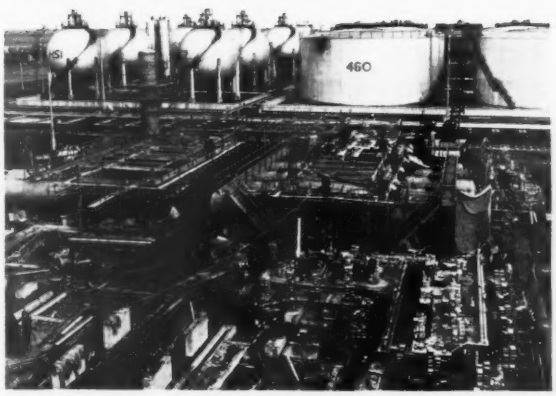
Diethanolamine unit.—Kellogg International have supplied a DEA regeneration unit for recovery of extracted H_2S.

Sulphur plant.—Plants for the manufacture and dispatch of up to 45 tons per day of sulphur from recovered H_2S. Supplied by Kellogg, Simon-Carves Ltd. and L. A. Mitchell Ltd.

Acid recovery plant.—A 12,500-tons-per-annum Simon-Carves plant for recovery of acid discarded from alkylation plant.

Contractors

Wherever possible all materials have been obtained from U.K. sources. Messrs George Wimpey & Co. Ltd are main contractors for mechanical erection and Sir Robert McAlpine & Sons are principal civil engineering contractors.



Behind the foundations for the solutizer unit are some of the storage facilities, including Horton spheres

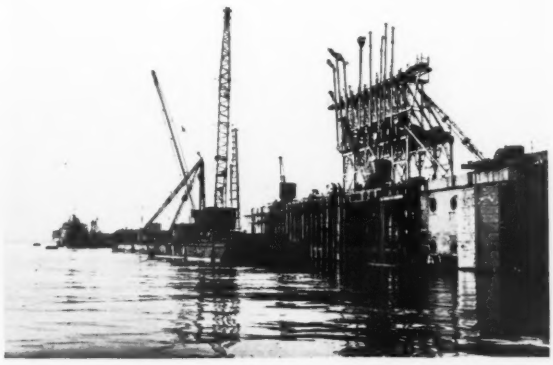
The specialist contractors referred to in the list of process units were responsible for design, engineering, and procurement of materials. Similar services for piping, pumphouses, tanks, and jetties, were undertaken by a consortium of W. J. Fraser & Co. and the Power-Gas Corporation.

Storage tank erection was undertaken by Motherwell Bridge & Engineering Co. Ltd and design and materials procurement for boiler and power plant by Parolle Electrical Plant Co. Ltd.

Consulting engineers for jetty building and plant foundations were Messrs Rendel, Palmer, & Tritton, and soil investigation work was carried out by Soil Mechanics Ltd.

The complete expansion programme was designed, planned, and co-ordinated under the direction of J. O'Hara, project manager of BP Trading Co. Ltd, and design work at site was the responsibility of the project engineer, C. Glenday. Construction manager at site is C. Dodd.

The new No. 2 crude-oil distillation unit, which has a capacity of 90,000 barrels per stream day



Work in progress on No. 5 jetty. Hose-handling equipment is well illustrated

World Petroleum Statistics 1956

World crude petroleum production in 1956 amounted to 6125 million barrels, an increase of 8·7 per cent over the 1955 figure, according to statistics produced by the U.S. Bureau of Mines.*

Total Middle East output was 1273 million barrels, a rise of 6·3 per cent. Although production in Iraq dropped appreciably following hostilities in Egypt, production in Iran rose by 64·2 per cent to 197 million barrels. A record was set by Venezuela with a total output of 899 million barrels, which was a 14·2 per cent rise over the 1955 total.

Imports of crude petroleum into Western Europe were 751 million barrels, a 6·2 per cent increase over 1955. United Kingdom imports rose slightly, and those to France by 5 per cent to 187 million barrels. Other rises in imports to European countries were in Italy, with 133 million barrels, an increase of 6·4 per cent, and in the Netherlands with 93 million barrels, compared with 84 million in 1955.

Crude petroleum exports from the Middle East (exclusive of shipments to Aden and Bahrain) totalled 966 million barrels, 5·1 per cent above 1955. Exports from Iraq fell 8 per cent to 221 million barrels, but those from Iran rose 71 per cent to 106 million barrels. Exports from Venezuela increased by 77 million barrels to 668 million.

World total crude runs to stills reached 6080 million barrels, a gain of 9·6 per cent. Western Europe processed 818 million barrels, 77 million more than in 1955. In the United States and Venezuela the increases were 6·4 and 13·8 per cent.

Details of production, imports, exports, crude runs, and stock changes for crude petroleum throughout the world, including U.S.S.R., China, and Eastern Europe, are given in Table I.

World output of refined products (excluding U.S.S.R. and Eastern Europe) totalled 5097 million barrels, compared with 4680 million in 1955. Percentage increases over 1955 were: motor fuel, 7·2; kerosine, 1·4; distillate fuel oil, 12·6; residual fuel oil, 10·0; and lubricants, 10·1. Country by country figures for all these are given in Table II.

Table III, which deals with bunker oil deliveries to ships engaged in international trade, shows that world deliveries were 2169 thousand barrels daily, compared with 970 thousand b.d. in 1955. The share of the United States in this total, at 436 thousand b.d., was more than twice her total for 1955 and similar large increases are recorded for each of the zones listed.

In Table IV of estimated demand for major refined products the term "estimated" is used because, with a few exceptions, no data on changes in inventories during the year were available. In most instances, demand has been calculated by the following formula; refinery production (including fuels consumed in refining), plus imports, minus exports, and plus or minus inventory changes. Loadings of bunker fuels in aeroplanes and vessels engaged in international movement are included in the demand data for countries where such loadings occurred and are not classified as exports.

Definitions

Motor fuel—Includes aviation gasoline, other gasolines and naphtha from crude and natural gasoline, and blended alcohol or benzol.

Kerosine—Includes all grades of kerosine for power, lighting, and heating.

Distillate fuel oil—Includes gas oil, light diesel oil, and light heating oils.

Residual fuel oil—Includes blends of distillate and residual oil in which residual is known to predominate.

Lubricating oil—Includes all grades of lubricating oil and oils used in grease manufacture.

During 1956 statistics on aviation jet fuel were too scarce to warrant country by country tabulations of the production of and demand for that product. In Table II (production of major refined products) the quantities of jet fuel that were known with sufficient accuracy are included in motor fuel as indicated in the table. In Table IV (demand) jet fuel has not been included in motor fuel or kerosine, in countries where information on production of jet fuel was available.

**World Petroleum Statistics*—1956, prepared by J. V. Hightower, commodity-industry analyst, under the direction of Donald S. Colby, chief, Branch of Petroleum Economics, Division of Petroleum U.S.B.M., WPS No. 105.

TABLE I

WORLD SUPPLY AND DEMAND—CRUDE PETROLEUM—1956*

(Thousands of barrels)

Country	*Production*	*Imports*	*Exports*	*Crude runs to stills*	*Other demand and losses*	*Stock change*
NORTH AMERICA:						
Canada	172,005	106,470	42,925	230,690	2,928	1,932
Cuba	543	3,951	—	3,917	10	567
Mexico*	90,660	—	6,616	77,402	6,530	112
United States	2,617,432	341,833	28,414	2,905,106	25,341	404
Total	2,880,640	452,254	77,955	3,217,115	34,809	3,015
Daily average	7,871	1,236	213	8,790	95	9

TABLE I

WORLD SUPPLY AND DEMAND—CRUDE PETROLEUM—1956—(CONTD.)

(Thousands of barrels)

Country	Production	Imports	Exports	Crude runs to stills	Other demand and losses	Stock change
SOUTH AMERICA AND CARIBBEAN:						
Argentina	31,024	30,500	—	§60,700	150	674
Bolivia	3,196	—	538	2,809	10	−161
Brazil	4,059	34,901	—	39,624	20	−684
Chile	3,542	3,659	—	7,228	10	−37
Colombia	44,968	—	29,098	14,600	860	410
Ecuador	3,420	—	1,129	2,013	10	268
Netherlands Antilles†	—	281,272	—	282,028	—	−756
Peru	18,383	—	3,045	15,729	25	−416
Puerto Rico	—	9,149	—	8,667	—	482
Trinidad	28,929	18,320	3,744	44,900	20	−1,415
Uruguay	—	7,603	—	7,818	—	−215
Venezuela	899,212	—	667,870	223,247	9,520	−1,425
Total	1,036,733	385,404	705,424	709,363	10,625	−3,275
Daily average	2,833	1,053	1,927	1,938	29	−8
WESTERN EUROPE:						
Austria	23,619	—	9,477	15,000	100	−958
Belgium	—	39,383	—	40,335	—	−952
Denmark	—	133	—	160	—	−27
France	9,346	187,436	—	196,083	40	659
Western Germany	25,408	58,886	—	85,070	150	−926
Italy and Trieste	4,208	133,266	—	139,549	20	−2,095
Netherlands	7,652	93,170	—	101,819	20	−1,017
Norway	—	555	—	601	—	−46
Portugal	—	7,291	—	7,293	—	−2
Spain	—	16,188	—	15,845	—	343
Sweden	—	13,227	—	13,950	—	−723
United Kingdom	496	201,292	—	201,992	5	−209
Total	70,729	750,827	9,477	817,697	335	−5,953
Daily average	193	2,051	26	2,234	1	−17
MIDDLE EAST:						
Aden	—	33,936	—	34,150	—	−214
Bahrain	11,015	60,856	—	71,718	129	24
Egypt	11,929	6,685	—	18,670	15	−71
Iran	197,148	—	105,819	90,270	860	199
Iraq	233,302	—	220,747	11,160	700	695
Israel	146	¶7,500	—	7,364	2	280
Kuwait	399,874	—	390,795	10,542	49	−1,512
Lebanon	—	7,578	—	7,578	—	—
Neutral Zone	11,684	—	11,491	—	20	173
Qatar	45,300	—	44,248	—	100	952
Saudi Arabia	360,923	—	288,035	72,665	751	−528
Turkey	2,075	—	—	1,967	10	98
Total	1,273,396	116,555	1,061,135	326,084	2,636	96
Daily average	3,479	318	2,899	891	7	—
OTHER ASIA:						
China	¶4,700	—	—	¶4,700	—	—
Formosa	21	4,800	—	5,198	—	−297
Burma	1,420	—	—			
India	2,876	30,543	—	33,231	50	3,676
Pakistan	2,118	—	—			
Japan	2,169	72,683	—	76,154	10	−1,312
Total	13,304	108,106	—	119,283	60	2,067
Daily average	36	295	—	326	—	5
OTHER AFRICA:						
Algeria	253	—	239	—	4	10
Canary Islands	—	13,590	—	12,911	—	679
Morocco	734	—	—	741	5	−12
Union of South Africa	—	7,431	—	7,390	—	41
Angola	52	—	30	—	—	22
Total	1,039	21,021	269	21,042	9	740
Daily average	3	57	1	57	—	2

TABLE I

WORLD SUPPLY AND DEMAND—CRUDE PETROLEUM—1956—(CONTD.)

(Thousands of barrels)

Country	Production	Imports	Exports	Crude runs to stills	Other demands and losses	Stock change
OCEANIA:						
Australia	—	56,716	—	57,124	—	—408
British Borneo	42,983	—	61,745	98,913	§800	1,788
Indonesia‡	96,430	20,257				
Philippines	—	5,759	—	5,966	—	—207
New Zealand	7	—	—	—	7	—
Total	139,420	82,732	61,745	162,003	807	—2,403
Daily average	381	226	169	443	2	—7
TOTAL ABOVE COUNTRIES	5,415,261	1,916,899	1,916,005	5,372,587	49,281	5,713
Daily average	14,796	5,237	5,235	14,679	135	—16
U.S.S.R. AND EASTERN EUROPE:						
U.S.S.R.	611,740	¶—	§8,740	¶599,000	¶4,000	¶—
Other Eastern Europe**	*98,424	10,176	¶—	¶108,000	¶600	¶
Total	710,164	10,176	8,740	707,000	4,600	—
Daily average	1,940	28	24	1,932	12	—
WORLD TOTAL	6,125,425	1,927,075	1,924,745	6,079,587	53,881	—5,713
Daily average	16,736	5,259	5,259	16,611	147	—16

*Mexico production figure excludes 3,436,000 barrels of natural gasoline.
†Netherlands Antilles imports are net, excluding 13,833,000 barrels re-exported. ‡Includes New Guinea production, 2,610,000 barrel
§Partly estimated. ¶Estimated. **Other Eastern Europe excludes Austria.

TABLE II

PRODUCTION OF MAJOR REFINED PRODUCTS BY COUNTRIES—1956*

(Thousands of barrels)

Country	Motor fuel†	Kerosine	Distillate fuel oil	Residual fuel oil	Lubricating oil	Total major products
NORTH AMERICA (Total)	1,602,114	146,470	730,227	519,989	62,274	3,061,074
Canada	88,099	14,216	57,583	48,311	2,171	210,380
Cuba	1,183	912	979	566	81	3,721
Mexico	18,289	7,862	5,978	44,413	811	77,353
United States	1,494,543	123,480	665,687	426,699	59,211	2,769,620
SOUTH AMERICA AND CARIBBEAN (Total)	139,955	33,439	120,385	397,446	4,670	695,895
Argentina	‡13,800	‡7,300	‡9,700	‡22,900	‡900	54,600
Bolivia	1,162	265	363	922	—	2,712
Brazil	18,578	227	2,892	15,611	3	37,311
Chile	3,033	170	1,224	2,343	—	6,770
Colombia	5,607	1,335	1,998	5,550	62	14,552
Ecuador	670	219	353	734	—	1,976
Netherlands Antilles	45,949	10,698	44,694	182,570	2,422	286,333
Peru	6,059	2,756	5,249	2,331	91	16,486
Puerto Rico	3,556	258	854	3,929	—	8,597
Trinidad	10,384	2,881	9,009	21,071	—	43,345
Uruguay	2,069	1,132	882	3,549	—	7,632
Venezuela	29,088	6,198	43,167	135,936	1,192	215,581
WESTERN EUROPE (Total)	195,280	38,385	190,324	318,302	17,057	759,348
Austria	1,861	1,085	3,961	7,199	413	14,519
Belgium	9,205	2,438	8,626	18,304	153	38,726
Denmark	—	—	34	12	—	46
France	52,249	3,209	41,275	72,112	4,143	172,988
Western Germany	27,378	1,643	24,335	16,031	3,563	72,950

TABLE II

PRODUCTION OF MAJOR REFINED PRODUCTS BY COUNTRIES—1956* (CONTD.)

(Thousands of barrels)

Country	*Motor fuel†*	*Kerosine*	*Distillate fuel oil*	*Residual fuel oil*	*Lubricating oil*	*Total major products*
Italy and Trieste	30,891	4,379	37,218	53,340	1,173	127,001
Netherlands	16,389	5,966	27,447	49,186	1,659	100,647
Norway	103	—	144	22	113	382
Portugal	1,933	1,330	1,353	2,413	—	7,029
Spain	3,665	586	3,295	7,236	231	15,013
Sweden	1,528	1,403	3,045	6,492	173	12,641
United Kingdom	50,078	16,346	39,591	85,955	5,436	197,406
MIDDLE EAST (Total)	60,381	33,741	56,499	151,695	63	302,379
Aden	5,627	2,665	5,104	19,190	—	32,586
Bahrain	15,367	7,256	13,780	30,011	—	66,414
Egypt	2,176	1,876	1,959	11,376	—	17,397
Iran	18,549	14,236	13,594	35,803	63	82,245
Iraq	1,646	1,836	2,038	4,822	—	10,342
Israel	1,698	1,005	1,372	2,679	—	6,754
Kuwait	430	155	1,904	7,797	—	10,286
Lebanon	1,499	764	1,553	3,534	—	7,350
Neutral Zone	—	—	—	—	—	—
Qatar	—	—	—	—	—	—
Saudi Arabia	12,935	3,948	15,060	35,404	—	67,347
Turkey	454	—	125	1,079	—	1,658
OTHER ASIA (Total)	31,144	12,008	17,394	46,703	3,053	110,302
China	§1,700	§470	§300	§1,400	§200	4,070
Formosa	1,021	1,042	689	2,104	—	4,856
Burma, India, and Pakistan	9,330	4,766	6,026	10,365	35	30,522
Japan	19,093	5,730	10,379	32,834	2,818	70,854
OTHER AFRICA (Total)	5,541	1,162	4,924	6,764	40	18,431
Algeria	—	—	—	—	—	—
Canary Islands	2,426	616	2,896	5,014	40	10,992
Morocco	273	91	150	85	—	599
Union of South Africa	2,842	455	1,878	1,665	—	6,840
OCEANIA (Total)	47,311	13,437	38,310	50,145	251	149,454
Australia	23,993	689	11,995	18,572	251	52,500
Indonesia and British Borneo	23,613	12,281	24,923	30,351	—	91,168
Philippines	2,705	467	1,392	1,222	—	5,786
TOTAL ABOVE COUNTRIES	2,081,726	278,642	1,158,063	1,491,044	87,408	5,096,883
Daily average	5,688	761	3,164	4,074	239	13,926

*From crude petroleum, blending agents, and oils re-processed.

†Motor fuel includes the following known amounts of jet fuel (1000 barrels) for these countries: United States, 66,443; Canada, 4,025; Netherlands Antilles, 13,310; Venezuela, 2,931; France, 4,464; Italy, 4,558; and Aden, 440.

‡Partly estimated. §Estimated.

TABLE III

BUNKER OIL DELIVERIES TO VESSELS ENGAGED IN INTERNATIONAL TRADE—1956

(Thousands of barrels daily)

Zone	*Bunker distillate*	*Bunker residual*	*Total bunker oils*
United States (continental)	56·5	379·7	436·2
Canada	4·3	32·7	37·0
Central and South America	32·7	114·7	147·4
West Indies	64·1	203·9	268·0
West Africa*	46·8	92·7	139·5
United Kingdom and Eire	42·5	135·0	177·5
North Europe, including French and Atlantic ports	78·8	154·6	233·4
Mediterranean, including Spain and Portugal	52·1	121·1	173·2
Middle East, including Egypt, Red Sea, and Persian Gulf	55·2	216·8	272·0
South and East Africa	8·9	27·9	36·8
India, Burma, and Ceylon	4·6	32·2	36·8
East and South Asia, including Indonesia and Japan	35·9	128·5	164·4
Australasia	11·3	35·5	46·8
Total above	493·7	1675·3	2169·0
Total above, excluding United States	437·2	1295·6	1732·8

*Partly estimated.

TABLE IV

ESTIMATED DOMESTIC DEMAND FOR MAJOR PRODUCTS—1956

(Thousands of barrels)

Country	*Motor fuel*	*Kerosine*	*Distillate fuel oil*	*Residual fuel oil*	*Lubricating oil*	*Total major products*
NORTH AMERICA AND CARIBBEAN:						
Alaska and Hawaii	5,650	140	2,500	7,470	130	15,890
Canada	88,198	16,124	66,215	56,550	3,348	230,435
Costa Rica	400	50	350	340	20	1,160
Cuba	5,821	969	2,709	10,695	294	20,488
Dominica	740	100	400	800	50	2,090
Guatemala	870	150	354	1,053	35	2,462
Haiti	350	30	250	130	4	764
Jamaica	620	170	660	2,110	30	3,590
Mexico	24,652	8,678	9,961	31,247	1,016	75,554
Nicaragua	440	100	360	90	10	1,000
Panama, Canal Zone	400	20	2,420	4,200	10	7,050
Panama, Republic	686	164	240	600	20	1,710
Puerto Rico	4,000	750	1,000	4,500	80	10,330
Salvador	560	150	130	450	20	1,310
Trinidad	692	216	2,170	8,400	39	11,517
United States	1,377,544	117,292	616,007	561,691	43,934	2,716,468
Total above	1,511,623	145,103	705,726	690,326	49,040	3,101,818
SOUTH AMERICA:						
Argentina	14,650	8,142	13,500	42,220	1,397	79,909
Bolivia	710	225	329	725	10	1,999
Brazil	25,516	4,854	12,102	27,357	1,368	71,197
Chile	3,862	1,324	2,353	6,820	190	14,549
Colombia	7,782	1,722	2,423	3,756	260	15,943
Ecuador	1,221	206	430	890	30	2,777
Paraguay	248	72	86	69	13	488
Peru	5,217	2,046	2,369	3,967	71	13,670
Uruguay	2,269	1,260	1,478	5,103	60	10,170
Venezuela	11,768	3,650	7,579	21,401	416	44,814
Total above	73,243	23,501	42,649	112,308	3,815	255,516
WESTERN EUROPE:						
Austria	2,891	166	2,492	6,700	557	12,806
Belgium and Luxembourg	9,280	1,497	11,570	14,800	850	37,997
Denmark	6,345	896	6,641	12,113	357	26,352
Finland	3,100	560	2,800	3,560	190	10,210
France	42,800	862	28,530	62,500	3,549	138,241
Western Germany	28,436	473	30,541	36,482	3,899	99,831
Greece	2,200	810	3,200	4,800	150	11,160
Iceland	500	35	800	900	30	2,265
Ireland	3,285	828	1,380	3,553	153	9,199
Italy, Trieste	12,708	1,279	14,500	49,800	1,344	79,631
Netherlands	9,576	2,200	14,867	26,434	900	53,977
Norway	3,061	486	7,456	9,400	320	20,723
Portugal	1,996	1,656	2,700	3,637	168	10,157
Spain	5,851	1,390	5,646	11,349	600	24,836
Sweden	10,403	3,666	23,933	28,100	850	66,952
Switzerland	5,440	350	9,840	3,221	350	19,201
United Kingdom	73,030	11,059	39,478	83,210	6,356	213,133
Total above	220,902	28,213	206,374	360,559	20,623	836,671
MIDDLE EAST:						
Bahrain	257	80	1,360	3,747	8	5,452
Iraq	1,621	1,604	1,746	4,200	100	9,271
Israel	1,785	1,263	1,596	4,542	90	9,276
Kuwait	629	148	835	8,894	5	10,511
Saudi Arabia	1,583	337	2,170	9,665	20	13,775
Syria, Lebanon, Jordan	2,200	1,100	3,100	3,600	NA	10,000
Turkey	3,300	1,600	3,100	1,200	300	9,500
Total above	11,375	6,132	13,907	35,848	523	67,785
ASIA:						
Burma	950	440	630	250	100	2,370
Ceylon	1,200	780	1,500	3,000	70	6,550
Formosa	1,200	300	750	1,700	100	4,050
India	8,790	11,700	7,200	7,600	1,040	36,330

TABLE IV
ESTIMATED DOMESTIC DEMAND FOR MAJOR PRODUCTS—1956 (CONTD.)
(Thousands of barrels)

Country	Motor fuel	Kerosine	Distillate fuel oil	Residual fuel oil	Lubricating oil	Total major products
Indo-China	2,000	490	650	700	100	3,940
Japan	19,431	4,485	8,000	46,500	3,120	81,536
Malaya	3,150	720	5,900	14,900	200	24,870
Pakistan	1,260	1,570	2,963	5,887	240	11,920
Thailand	2,150	740	1,800	1,160	190	6,040
Total above	40,131	21,225	29,393	81,697	5,160	177,606
AFRICA:						
Algeria	2,351	620	3,258	5,122	154	11,505
Belgian Congo	1,750	260	1,100	90	150	3,350
Egypt	2,674	6,014	4,290	16,350	340	29,668
Ethiopia	350	30	50*	NA	40	470
French Equatorial Africa	500	90	200*	NA	30	820
Ghana	1,000	250	700	300	70	2,320
Kenya	1,300	300	4,400*	NA	70	6,070
Liberia	70	20	50	—	8	148
Madagascar	480	120	200	20	40	860
Morocco	3,043	448	1,400	1,800	100	6,791
Nigeria	1,900	600	650	250	70	3,470
Rhodesia and Nyasaland	1,920	310	900*	NA	140	3,270
Sudan	650	160	450	760	40	2,060
Tanganyika	600	200	950*	NA	40	1,790
Tunisia	766	295	887	1,475	50	3,473
Uganda	550	180	250*	NA	30	1,010
Union of South Africa	12,900	4,300	6,000	4,400	800	28,400
Total above	32,804	14,197	25,735	30,567	2,172	105,475
OCEANIA:						
Australia	28,769	3,599	10,568	16,660	1,367	60,963
Indonesia	4,990	6,455	4,700	4,900	228	21,273
New Caledonia	100	NA	270*	NA	20	390
New Zealand	7,180	270	2,190	2,180	260	12,080
Philippines	5,541	1,522	3,305	3,524	342	14,234
Total above	46,580	11,846	21,033	27,264	2,217	108,940
Total above countries	1,936,658	250,217	1,044,817	1,338,569	83,550	4,653,811
Daily average	5,291	684	2,855	3,657	228	12,715

*May include unreported amount of residual fuel. NA. Not available.

Wells Drilled in Western Canada in 1957

In its annual survey, published in the issue of 27 January, *The Oil and Gas Journal* includes the following details of wells drilled in Western Canada during 1957.

	Alberta	Saskatchewan	Manitoba	British Columbia	Total
Field wells:					
Oil wells	878	850	134	10	1,872
Gas wells	138	18	0	48	204
Dry holes	418	331	88	34	871
	1,434	1,199	222	92	2,947
Wildcat wells:					
Oil wells	56	44	2	8	110
Gas wells	49	8	0	26	83
Dry holes	309	243	66	24	642
	414	295	68	58	835
Footage drilled:					
Field wells	5,230,217	4,010,054	323,845	152,365	9,716,481
Wildcat wells	2,234,730	1,175,765	183,861	360,967	3,955,323
	7,464,947	5,185,819	507,706	513,332	13,671,804

MIDDLE EAST PRODUCTION

	January
	Tons
Iraq Petroleum Co. Ltd	1,524,690
Basrah Petroleum Co. Ltd	880,286
Mosul Petroleum Co. Ltd	113,234
Qatar Petroleum Co. Ltd	626,170
Iraanse Aardolie Exploratie en Productie Mij	3,466,000
Kuwait Oil Co. Ltd	5,510,482
	Barrels
Arabian American Oil Co. (Saudi Arabia)	30,330,416

The refinery throughput at Abadan of the Iraanse Aardolie Raffinage Mij for January was 1,275,000 tons.

During January total crude oil deliveries from Sidon, Lebanon, were 9,099,855 brl, an average of 293,544 b.d., states the Trans-Arabian Pipe Line Company. This compares with a total of 9,546,013 brl, an average of 307,936 b.d., for January 1957.

Crude processed at the Arabian American Oil Co.'s Ras Tanura refinery in January was 5,775,928 brl, an average of 186,320 b.d., compared with 5,717,899 brl, an average of 184,448 b.d., during the same month of 1957.

World Tanker Statistics 1957

Lloyd's *Annual Summary of Merchant Ships Launched in the World during* 1957 states that of the world total of 1950 merchant ships launched, 314, totalling 3,850,701 tons, were oil tankers. This represents 45 per cent of the world output, in tonnage, compared with 34 per cent in 1956, but still less than the 46 per cent reached in 1955. It is also an increase of 1,583,638 tons over 1956.

Of tankers launched 36 per cent were built in Japan, 14 per cent in Britain, and 10 per cent in Sweden. Japan led both in number and tonnage with 106 vessels of 1,378,078 gross tons. Britain's second place was gained with less than half the number and tonnage, the figures being 45 ships and 535,333 gross tons. Sweden launched 23 ships of 389,093 tons. Although the United States launched only 16 tankers their gross tonnage was 290,143, which was more than 40,000 tons greater than the figure of 248,400 for Germany, which however launched 53 tankers.

Liberia led the figures for country of registration with 55 tankers of 1,215,750 gross tons, Japan was second with 51 of 175,939 gross tons, and Britain third with 46 tankers but of considerably greater tonnage, 596,602 gross tons. Norway took fourth place with 41 tankers of 578,331 gross tons. Details of countries of registration are given in Table I, and tonnages and country of build in Table II.

Tankers under Construction

In the last quarter of 1957, according to Lloyd's *Register Shipbuilding Returns*, tankers under construction in Britain at the end of December represented 44·7 per cent of the total tonnage under construction in the United Kingdom.

British yards were building 75 oil tankers with a gross tonnage of 1,048,408, an increase of 43,700 tons on the figure for the third quarter of 1957. Of these vessels thirty-two, totalling 232,822 gross tons, were motor ships. Sixty were for registration in Britain, two each for Belgium, the Irish Republic, and Liberia, six for Norway, one for Panama, and two for unspecified countries.

During the fourth quarter of the year in Britain twelve tankers, of 192,075 gross tons, were commenced, sixteen, of 211,321 gross tons, were launched, and twelve, of 146,473 gross tons, were completed.

Britain led the world as the country in which the greatest number of tankers under construction were to be registered with a total of 73 ships. This was far ahead of the second

TABLE I

REGISTRATION OF OIL TANKERS LAUNCHED IN 1957

Country of registration	*No.*	*Gross tons*	*Country of build*	*No.*	*Gross tons*
Britain ...	46	592,602	Britain... ...	40	474,209
			Germany ...	4	72,846
			Italy	1	22,000
			Japan ...	1	23,547
British Commonwealth	3	17,220	Commonwealth	1	4,500
			Belgium ...	1	12,500
			Italy	1	220
Argentina ...	1	1,600	... ...	1	1,600
Denmark ...	8	112,604	Denmark ...	2	36,416
			Italy	1	12,800
			Japan ...	4	50,942
			Sweden ...	1	12,446
Finland ...	1	12,000	Netherlands ...	1	12,000
France ...	9	174,617	Denmark ...	1	18,300
			France... ...	6	121,270
			Netherlands ...	1	13,500
			Sweden ...	1	21,547
Germany ...	30	23,422	Germany ...	30	23,422
Irish Republic	1	12,000	Britain... ...	1	12,000
Italy	7	121,221	Italy	7	121,221
Japan ...	51	175,939	Japan	51	175,939
Liberia ...	55	1,215,750	Britain... ...	3	36,174
			Belgium ...	3	46,937
			France... ...	3	101,264
			Germany ...	3	39,700
			Japan ...	36	863,347
			Netherlands ...	1	13,636
			Sweden ...	2	50,583
			U.S.A.... ...	4	64,109
Netherlands ...	19	131,691	Commonwealth	1	275
			Germany ...	9	8,240
			Japan ...	1	20,800
			Netherlands ...	8	102,376
Norway ...	41	578,331	Britain... ...	1	12,950
			Belgium ...	1	16,150
			France... ...	1	22,000
			Germany ...	6	103,193
			Japan ...	3	38,937
			Netherlands ...	1	25,290
			Norway ...	16	165,730
			Sweden ...	12	194,081
Panama ...	13	273,928	Italy	3	68,762
			Japan ...	10	205,166
Portugal ...	1	1,177	... ...	1	1,177
Russia (U.S.S.R.)	2	6,630	Finland ...	2	6,630
Spain ...	5	50,400	... ...	5	50,400
Sweden ...	8	122,536	Denmark ...	1	12,100
			Sweden ...	7	110,436
Switzerland ...	1	999	... ...	1	999
U.S.A. ...	12	226,034	U.S.A.... ...	12	226,034

Of the 314 tankers under construction, 187 were for registration in country of build.

TABLE II

OIL TANKERS OF 100 TONS AND UPWARDS LAUNCHED IN 1957

Country of build	Steam		Motor		Total	
	No.	Tons gross	No.	Tons gross	No.	Tons gross
Britain & Northern Ireland	26	456,222	19	79,111	45	535,333
Canada ...	—	—	1	4,500	1	4,500
Hong Kong ...	—	—	1	275	1	275
Argentina ...	—	—	1	1,600	1	1,600
Belgium ...	2	31,000	3	44,587	5	75,587
Denmark ...	—	—	4	66,816	4	66,816
Finland ...	—	—	2	6,630	2	6,630
France ...	6	171,554	4	72,980	10	244,534
Germany ...	5	104,996	48	143,404	53	248,400
Italy	9	210,683	4	14,320	13	225,003
Japan ...	42	1,055,352	64	323,326	106	1,378,678
Netherlands ...	6	95,945	6	70,857	12	166,802
Norway ...	1	16,500	15	149,230	16	165,730
Portugal ...	—	—	1	1,177	1	1,177
Spain ...	—	—	5	50,400	5	50,400
Sweden ...	5	102,033	18	287,060	23	389,093
U.S.A. ...	14	288,060	2	2,083	16	290,143
Total ...	116	2,532,345	198	1,318,356	314	3,850,701

country, Norway, with 48 vessels, and the third, Panama, with 28.

World construction figures for the last quarter show that Japan took second place to Britain with 45 tankers building, and Germany came next with 40, more than half of which were to be registered in Germany.

Of the total tonnage under construction in the world (excluding the U.S.S.R. and satellite countries) oil tankers represented 49·1 per cent. Total gross tanker tonnage building was 4,883,561, and of these 332 ships 172 were motor ships.

Details of construction in individual countries are given in Table III.

TABLE III

OIL TANKERS UNDER CONSTRUCTION AT END-DECEMBER 1957

Country of build	Steam		Motor		Total	
	No.	Tons gross	No.	Tons gross	No.	Tons gross
Great Britain & Northern Ireland ...	43	815,586	32	232,822	75	1,048,408
British Commonwealth	—	—	1	6,000	1	6,000
Argentina ...	—	—	1	1,600	1	1,600
Belgium ...	4	63,000	2	24,500	6	87,500
Denmark ...	—	—	6	92,100	6	92,100
Finland ...	—	—	6	19,980	6	19,980
France ...	8	172,180	5	68,425	13	240,605
Germany ...	10	194,000	30	65,924	40	259,924
Italy	23	509,362	7	71,900	30	581,262
Japan ...	32	782,350	13	86,691	45	869,041
Netherlands ...	9	156,800	13	135,307	22	292,107
Norway ...	3	50,140	15	162,979	18	213,119
Peru	—	—	1	4,297	1	4,297
Portugal ...	—	—	4	23,570	4	23,570
Spain ...	1	22,000	12	122,610	13	144,610
Sweden ...	3	61,500	22	345,295	25	406,795
U.S.A. ...	24	577,403	1	1,740	25	579,143
Yugoslavia ...	—	—	1	13,500	1	13,500
World total	160	3,404,321	172	1,479,240	332	4,883,561

WELLS DRILLED IN THE UNITED STATES IN 1957

The following figures are taken from the annual survey of the U.S. petroleum industry's drilling activities during 1957, published in the 27 January issue of *The Oil and Gas Journal*.

Field wells:		
Crude wells	26,304	
Condensate wells	583	
Gas wells	3,537	
Dry holes	10,614	
Service wells	1 061	
		42,099
Wildcat wells:		
Crude wells	1,172	
Condensate wells	105	
Gas wells	375	
Dry holes	10,087	
		11,739
		53 838
Footage drilled (1000 ft):		
Field wells	166,106	
Wildcat wells	55,794	
		221,900
Well depth (feet):		
Over 15,000	83	
12,500–15,000	499	
10,000–12,500	1,285	
7,500–10,000	2,714	
5,000– 7,500	5,976	
3,750– 5,000	5,798	
2,500– 3,750	11,404	
1,250– 2,500	10,026	
Below 1,250	4,314	
		42,099
Drilling methods:		
Rotary		46,549
Cable		7,289
		53,838
Rigs in operation:		
1 January		2,395
31 December		2,325

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Symposium on Petrol Injection

The Automobile Division of The Institution of Mechanical Engineers is holding a Symposium on Petrol Injection at 1 Birdcage Walk, Westminster, London, S.W.1, at 4.30 p.m. on 15 April. The papers to be read will be:—

The status of automotive petrol injection in the United States—Spring of 1958. Errol J. Gay.

Petrol injection in Germany. Dr Ing. H. Heinrich and H. Stoll.

Petrol injection—some further developments. E. W. Downing.

Members of the IP will be welcome and are asked to notify the IME of their intention to be present so that arrangements may be made. Refreshments will be served from 5.40 to 6.10 p.m.

Large Pipeline Projects

A. C. Hartley, C.B.E., a vice-president of the IP, is to present the James Clayton Lecture to the Institution of Mechanical Engineers at 1 Birdcage Walk, Westminster, London, S.W.1. The title of the lecture, which will be given on 2 May at 6.0 p.m., is "Large pipeline projects". Members of the IP are invited by the Council of the IME to attend.

Personal Notes

Dr A. E. Dunstan

Congratulations to **Dr A. E. Dunstan,** a past-president of the IP and its honorary editor for twenty-five years, on the celebration on 25 January of his eightieth birthday. Recently the editor had the pleasure of visiting Dr and Mrs Dunstan at their home in Cambridge.

Under the title of "Do you remember?" Dr Dunstan has written, for private circulation, his memoirs. In this he recalls how, in 1915, he joined the Anglo-Persian Oil Company and a few years later was offered the post of research chemist and instructed to start up a research organization. He writes: "After much searching I discovered . . . Meadhurst, containing fourteen rooms and a remarkably big semi-basement at Sunbury-on-Thames, with three acres of unrestricted freehold land attached. The price . . . was £937 in all." The entire research staff was two—Dr Dunstan and Dr F. B. Thole and the basement, ever after known as "the cellar", became the laboratory. To-day, Sunbury Research Station of British Petroleum Company "is costing something of the order of a million pounds a year and the original staff of two now approaches a thousand."

Dr Dunstan retired from his position of chief chemist of the Anglo-Iranian Oil Company at the end of 1946. At the same time he gave up his honorary editorship of the IP publications.

Both Dr and Mrs Dunstan send their greetings to their many friends in the industry who, in turn, will join us in wishing them a long continuance of their obviously happy retirement.

Carl B. Whyte, president of Procon Incorporated, Des Plaines, Illinois, has been elected president of National Constructors Association. **W. R. Wood,** president of The Girdler Corporation, Louisville, Kentucky, was elected vice-president.

The association is an organization of leading engineering and construction firms specializing in erection of major industrial facilities.

Mr Whyte, a Georgia Institute of Technology graduate, joined Procon in 1950 and has been its president since 1952.

Currently, Procon and its subsidiaries are engaged in engineering and constructing more than 30 projects in the United States and in eight other countries.

G. A. Harvey & Co. (London) Ltd regret to announce the death of their managing director and joint deputy chairman, **H. T. Eatwell.**

Mr Eatwell, who joined the Company as a sales engineer in the heavy construction department, had served for nearly 30 years.

In 1937 he was appointed a director and became managing director in 1947. From 1952 he also held the post of deputy chairman.

W. F. Wackrill, O.B.E.

W. F. Wackrill, a director of Esso Petroleum Co. Ltd retired on 28 February under the Company's retirement plan.

Mr Wackrill joined Esso Transportation Co. Ltd in 1946 as general manager. He was appointed a director the following year and managing director in 1952. In January 1954, when the marine activities of the Esso Group were re-organized, he was appointed a director of Esso Petroleum Co. Ltd.

Prior to his association with Esso, Mr Wackrill was in the Civil Service, becoming assistant secretary, Ministry of Shipping and War Transport during the war years 1939–1945 and director of the Ministry's tanker division in 1945–46.

Until recently Mr Wackrill was a member of the council of the Chamber of Shipping, of the executive council of the Shipping Federation, and of the committee of Lloyd's Register of Shipping.

G. W. Searle has been appointed deputy chief accountant to the British Petroleum Co. Ltd.

Mr Searle served with W. B. Keen & Co., City accountants until 1939. During the war he was in the R.N.V.R. and was awarded the D.S.C. in 1943 when commanding a flotilla of motor launches in the Eastern Mediterranean.

He joined the accounts department of the BP Co. in London in 1946.

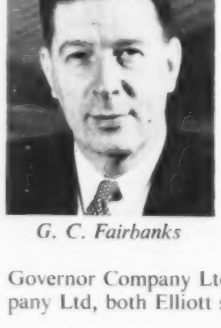
David C. Nutting has joined the board of Solartron Industrial Controls Ltd, a member company of The Solartron Electronic Group.

He will be responsible for processing contracts for design and manufacture of electronic control systems and for sales.

Mr Nutting has served with the Bristol Instrument Co. Ltd, with Sunvic Controls Ltd, and with Thomas Hedley Ltd.

In 1950 he was appointed project engineer and chief instrument engineer to E. B. Badger & Sons Ltd.

He is well known for many articles on quality measurement, process control, and the trend towards automatic supervisory control.



G. C. Fairbanks

George C. Fairbanks, M.I.P.E., formerly a deputy general manager, has been appointed a director of Elliott Brothers (London) Ltd.

Mr Fairbanks joined the Company in 1930 as a toolmaker. In 1933 he became supervisor of the Admiralty gyro department, and by the end of the war he was shops superintendent at the Company's Lewisham factory.

After the war he became production manager at Lewisham, and in 1956 a director of the Fisher Governor Company Ltd, and of Bristol's Instrument Company Ltd, both Elliott subsidiaries.

Captain W. M. Hutchison, C.B.E.

After nearly 39 years service with the Company, Captain **W. M. Hutchison,** chief marine superintendent of BP Tanker Co. Ltd, has retired.

He joined the British Tanker Co. Ltd in 1919 and was given his first command in April 1928. In 1936 he was transferred to shore duties and was promoted chief marine superintendent in 1943.

Captain J. W. Ross

He was created a Commander of the Order of the British Empire in 1956. He is a warden of the Honourable Company of Master Mariners, and chairman of its Technical Committee.

Captain Hutchison has been succeeded by Captain **J. W. Ross,** who is the Company's first ex-apprentice to hold the post. Captain Ross joined the Company in 1921, received his first command in 1938, and was transferred to shore duties in 1942. Since 1952 he has been deputy chief marine superintendent.

The National Benzole Co. Ltd have appointed the following new district managers from 1 February.

G. H. Harrison for Lincoln District, West Riding Division.

W. A. Walmsley for Cambridge District, and **H. Cole** for Ipswich District, both in the Eastern Division.

As part of a general rearrangement and expansion of their marketing organization that has taken place during recent months, a new post of manager, Marketing, has been created and has been filled by **Sydney Tindale,** formerly sales manager, Consumer Trade.

D. A. Shaw, previously sales manager, Retail Marketing, has been appointed sales manager of the Company with responsibility for the Retail Marketing, Consumer Trade, Real Estate, Special Trades, and Pump Departments.

T. F. Macfarlane has been appointed manager, Consumer Trade, at the Company's Head Office in London.

The M. W. Kellogg Company, New York, a subsidiary of Pullman Incorporated, have made the following appointments.

The four new assistant vice-presidents of sales are:—

M. J. Carnesale for portions of the United States and the whole of Central and South America.

W. T. McCay for the Mid-Continent and Gulf Coast area.

J. A. Petrie for the Eastern Hemisphere and Canada.

J. M. McAneny for Fabricated Products and engineering and construction services other than those associated with the petroleum and petrochemical industries.

L. J. Kelly was appointed assistant vice-president, engineering; **H. R. Schuster** assistant vice-president, procurement; **J. W. Smith** assistant vice-president, construction; and **F. E. Johnson,** Jr, assistant vice-president, contract operations.

Petroleum in Parliament

Suez Canal Clearance Costs

On 27 January Commander Noble, Minister of State for Foreign Affairs, said that the total cost of clearing the Suez Canal was approximately £3,401,000. That included the costs incurred by the Anglo-French salvage fleet during the period in which it was solely responsible for clearance work and also the costs of its services when it formed part of the United Nations fleet after the United Nations took over responsibility on 22 December 1956.

The costs of the United Nations fleet were to be met from the proceeds of a surcharge of 3 per cent which was to be levied on the dues of all ships passing through the Suez Canal, while those incurred by the United Kingdom before 22 December ranked as a Governmental claim against Egypt.

All fleets would pay the same surcharge which the Minister agreed was not an easy decision to take, as it meant that British shipowners, who had already suffered from the closing of the canal, would have to pay a further sum, but the U.K. Government thought that it was the least unsatisfactory of the possible arrangements.

On 28 January, in a written answer, Commander Noble stated that the United Kingdom delegate voted in favour of the United Nations resolution levying the 3 per cent surcharge on all ships using the canal. The Government was waiting for the Secretary-General of the United Nations to make detailed proposals which were to be the subject of negotiation between the United Nations and all the interested parties.

On 29 January, in a written answer, Mr Ormsby-Gore Minister of State for Foreign Affairs, stated that her Majesty's Government had supported the U.N. proposal for the surcharge because the credit of the United Nations had been engaged when the necessary advances of money were obtained for clearing the canal. Until details of the plan were known it was difficult to estimate accurately the proportion of the surcharge to be borne by British shipping but the current proportion of shipping using the Canal that flew the British flag was just over 20 per cent.

Oil Supplies Development in the Middle East

In a written answer on 22 January Mr Ormsby-Gore, Minister of State for Foreign Affairs, stated that responsibility for the development of Middle East oil supplies rested with the countries which owned the oil and the companies to which they had granted concessions. Any initiative to promote consideration of an international oil agency for oil development in those countries should, therefore, come from the countries themselves who exercised sovereign rights over their natural resources of oil.

Profits from the production of oil in the Middle East were divided equally between the Governments owning the oil and the oil companies producing it. It was a matter for the Governments concerned how they applied their proportions of the profits.

Some of the Governments allocated a considerable percentage of their income from oil to economic development programmes for the benefit of their peoples. In the case of Iraq that amounted to 70 per cent of the oil revenues.

U.K. Petrol Prices

In a written answer on 27 January the Parliamentary Secretary to the Ministry of Power said that, under defence regulation 55AB, the Minister had statutory power to control petrol prices should he consider it necessary.

Flags of Convenience

In a written answer on 28 January the Minister of Transport and Civil Aviation stated that by doubling the investment allowance for U.K. shipping H.M. Government had already taken steps to reduce the competitive advantages of shipping registered under flags of convenience.

The problem of rapid expansion of those tax-free flags was under consideration.

Laid-up Vessels

On 29 January Mr Neave, Joint Parliamentary Secretary to the Ministry of Transport and Civil Aviation, said that twenty-four tankers totalling 203,576 gross tons, or 297,256 dw tons, registered in Great Britain, were laid up in ports and estuaries of the United Kingdom

Heavy Hydrocarbon Oil Tax Revenue

On 4 February the Chancellor of the Exchequer said that the revenue in 1957 from the tax on heavy hydrocarbon oil used as road fuel was about £65 million, nearly half of which was from oil used in buses and other public passenger service vehicles.

Hydrocarbon Oil Duties

In a written answer on 10 February the Financial Secretary to the Treasury stated that the former Chancellor of the Exchequer (P. Thorneycroft), at the time of his budget on 9 April 1957, estimated that at the rates of duty of 2*s.* 6*d.* a gallon for imported oils and 1*s.* 3*d.* for indigenous oils he then introduced—and allowing for the higher rates previously in force—the yield of the hydrocarbon oil duties in the present financial year would amount to £340 million. Spread over the total quantity of hydrocarbon oils expected to be delivered for use in Britain in the same period, this amount would represent about 1*s.* 1*d.* a gallon.

Suez Canal

On 12 February, Commander Noble, Minister of State for Foreign Affairs, said that it remained the strongly held view of H.M. Government that the Suez Canal should be operated as an international waterway in conformity with the six principles laid down by the Security Council of the United Nations in October 1956.

It was too early to forecast what effect the union of Egypt and Syria might have on the operation of the Canal, but the Minister noted that one of the seventeen principles publicly announced by Colonel Nasser as the basis of the union was "provisions of international treaties and agreements concluded by Syria and Egypt with other States shall remain in force with regard to the territorial spheres stipulated at the time of their conclusion, in accordance with the provisions of international law".

The Minister continued that it seemed to follow from this that the new State would accept the same obligations as did Egypt with regard to the operation of the Canal.

European Oil Supplies

On 19 February, Mr Ormsby-Gore, Minister of State for Foreign Affairs, said that the report of the Oil Committee of the Organization for European Economic Co-operation on safeguarding European oil supplies was being studied by H.M. Government.

About one-third of the tankers under construction or on order were of 40,000 tons dw or over. A substantial number of tankers was at present laid up in Britain. Stocks of oil in the United Kingdom were considerably higher than before the Suez crisis so that Britain was now less dependent upon the Suez Canal.

Petrol Filling Stations

In a written answer on 19 February the Parliamentary Secretary to the Ministry of Power stated that he estimated that capital expenditure by the oil companies on filling stations under their own ownership amounted to about £2 million in 1956 and £3 million in 1957, the total number of stations concerned in the two years taken together being between 500 and 600. The total number of filling stations in Britain was about 30,000 and changed little from year to year.

Dutiable Hydrocarbon Oil Consumption

In a written answer on 18 February the Chancellor of the Exchequer stated that on the basis of the estimate made by the former Chancellor at the time of his 1957 budget, nearly 2900 million gallons of hydrocarbon oils would be subject to the Excise duties in the present financial year, of which about 140 million gallons would be subject to the duty on oils produced in the United Kingdom from indigenous materials.

It was estimated that about one-third of the total was used in private cars (including those used for business purposes).

A BP photograph

On 26 December 1957 H.E. the Ruler of Abu Dhabi, Sheikh Shakhbut bin Sultan, visited the mobile drilling barge Adma Enterprise *in the harbour at Das Island. He was accompanied by P. Wainwright, area manager, Das Island, and T. Hillyard, chief local representative of Abu Dhabi Marine Areas Ltd, in which the BP Co. has a two-thirds shareholding and Compagnie Française des Petroles one third. The Ruler of Abu Dhabi* (centre) *is seen above walking on the helicopter platform of* Adma Enterprise *with* (right) *P. Wainwright and* (left) *T. Hillyard*

Around the Branches

BAHRAIN, ESSEX, FAWLEY, KUWAIT, LONDON, NORTHERN, SCOTTISH, SOUTH-EASTERN, SOUTH WALES, STANLOW, TRINIDAD

Scottish Branch

A meeting of the Branch was held in the Recreation Hall, BP Refinery (Grangemouth) Ltd, on 20 February. J. M. Caldwell, J.P., chairman, introduced R. F. Leach, head of films section of Shell-Mex and B.P. Ltd, who had been associated with the production of all Shell-Mex and B.P. films. Mr Leach spoke on "Films in the Oil Industry".

The makers of instructional films in Britain, Mr Leach said, had played an important part in winning the war by increasing the speed and efficiency of training courses. The war also provided a great stimulus to the number and quality of instructional and industrial films. The techniques pioneered then could be readily adapted to current needs.

The oil industry had been a major film producer and film user since the mid-twenties. Today, one of Britain's largest free film lending libraries, that of Shell-Mex and B.P. Ltd, had a catalogue of more than 130 films. The Company used films for promoting good public relations, as a sales aid, for human relations training, for staff training, for the explanation of techniques, and for record purposes.

Mr Leach estimated Britain's production of films at about 500 a year.

The oil industry had found that films provided a clear understanding of the industry's scope, importance, and problems, and also showed how these problems touched the lives of almost everybody.

Mr Leach's talk was illustrated by films, and after answering a number of questions, he was accorded a vote of thanks by the chairman.

South-Eastern Branch

Thirty-five members and friends were present at the King's Head Hotel, Rochester, on 4 February, when R. Bonafont of Posford, Pavey and Partners, gave a talk on "Offshore Drilling".

Although Mr Bonafont confined his attention chiefly to the rig used by the National Coal Board in their borings in the Firth of Forth, he also mentioned a similar, but larger, rig now under construction for use off the coast of Northumberland and Durham.

The structure currently in operation is 130 ft from the base to the platform, with a 54 ft drilling rig above that. It is designed to withstand waves of 30 ft and winds of 120 m.p.h. and to operate in 13 fathoms of water. The platform is on two decks, on the upper of which are the rig and its ancillary equipment, together with workshops, laboratory, and lifeboat. The lower deck contains living and recreational facilities for the 20-man crew, and the Neesans generators, distillation apparatus, and radio-telephone. The platform supporting structure is fabricated from 24-inch diameter steel pipes mounted on a cruciform base-member resting on the sea bed. The whole rig weighs 590 tons.

The rig is moved supported between two pontoons towed by tugs. Each pontoon is equipped with two electric winches supplied with power by the diesel generators on the platform. Lifting is by eight 8-inch circumference cables attached to lugs on the base member, which is filled with air before lifting commences, so reducing the effective weight by 200 tons.

A film exhibited during and after the lecture showed construction of the unit at St David's Harbour on the Firth of Forth, and its operation at two positions off the coasts of Fife.

The audience was surprised to learn that in spite of the magnitude of this venture the total cost of the unit was under £220,000. However, each time the unit is moved the cost amounts to £10,000.

Drilling time is between six and twelve months, and so far three bores have been completed, while a fourth is in progress. All have given valuable information on the position of the coal measures known to extend under the Firth of Forth which will be worked from new collieries under construction in Fife and the Lothians. The magnitude of the prize to be gained from this enterprise is shown by the estimate of 300 million tons of coal in the seams under the Firth of Forth.

The success of this venture has decided the NCB. to construct another to operate off the North-East coast of England. This will be 170 ft high and will operate in depths up to 20 fathoms.

After question time, a hearty vote of thanks was accorded to Mr Bonafont.

Trinidad Branch

The newly elected committee of the Trinidad Branch now consists of K. W. Barr, chairman, Dr A. L. Down, P. D. S. Bushe, G. R. K. Hillier, H. C. Hobson, C. P. Garner-Richards, with S. Howe as the honorary secretary and treasurer. Mr Howe's address is c/o Texaco Trinidad Inc., Forest Reserve, Trinidad, B.W.I.

Notes of the Month

Standard Oil Revenue and Expenditure in 1957

Preliminary estimates by Standard Oil Company (New Jersey) put consolidated earnings for 1957 at about $800 million, or slightly below the $808·5 million reported for 1956.

Gross revenues from sales and investments increased by $690 million, or 9½ per cent, to $7972 million, because of improved realizations in the early part of the year, while the latter half saw a steady weakening in product prices. Higher crude oil and product sales in the first half contributed to this increase.

The improvement in total revenue was more than offset by rises in costs of crude oil purchases, salaries, and other operating expenses. A substantial part of this increase was a 26 per cent rise in exploration cost incurred in the expanding search for oil and gas reserves. Earnings for 1957 were reduced by certain non-recurring charges, totalling approximately $22 million, in connexion with more efficient arrangements of refining operations on the East Coast.

Income and operating taxes, together with import duties, consumer taxes, and other payments to the United States and foreign Governments, are estimated at $2304 million for 1957, compared with $2171 million for 1956.

Capital and exploration expenditures made by consolidated companies totalled $1353 million, an increase of 25 per cent over 1956. Of the new record outlays for 1957, additions to property, plant, and equipment were $1107 million, while other expenditures in the search for oil and gas, charged against income, were $246 million. Approximately 85 per cent of the total expenditure was made in the Western Hemisphere, and about half of that amount was spent in the United States.

World gross crude oil production was estimated at 2386 million b.d., an increase of almost 3 per cent over the previous record reached in 1956. Refinery runs averaged 2426 million b.d. in 1957, compared with 2449 million b.d. in 1956.

Oil and the Manchester Ship Canal

Subsidiary effects of the dislocation of oil movements following the Suez crisis are reflected in the report of the year's activities of the Manchester Ship Canal Co.

Speaking at the hundredth ordinary general meeting last February, Sir Leslie Roberts, C.B.E., chairman, said that the volume of sea-borne traffic handled declined by 1·65 million tons, largely because of reductions in imports and exports of petroleum products.

Development plans by the oil industry were bound to affect, perhaps to a major extent, the general pattern of the oil traffic handled by the Port of Manchester. During 1957 the project for construction of deep-water oil berths in the Mersey off Tranmere Beach for 65,000-ton tankers had made further progress.

There were proposals for building pipelines between the Shell Company's Stanlow refinery and the chemical refinery at Partington. The latter might become one of the largest chemical plants in Europe with a market both in Britain and overseas.

All this would have repercussions on oil traffic in the Port of Manchester, but Sir Leslie could not forecast the consequences. These might, however, take the form merely of a change in pattern.

The maintenance of the Eastham Channel, which formed the access to the Ship Canal and the Queen Elizabeth II dock, was difficult and costly; during the past 3 years the dredging bill had accounted for between 43 and 53 per cent of the total expenditure.

First Oil-Gas Plant in New Zealand

A new town-gas from residual fuel oil plant has been completed at Hastings, New Zealand. Operating on the Onia-Gegi catalytic process, the plant was built for the Hastings Gas Co. Ltd by Humphreys & Glasgow Ltd through their Sydney, Australia office. Completion of the plant makes Hastings one of the first cities in the Southern Hemisphere to distribute gas made exclusively from fuel oil.

The plant, which is fully automatic, can be operated if necessary with only one operator in attendance, and has a capacity of 300,000 cu. ft/day.

The installation is particularly important to the gas-making industry in New Zealand because of big savings which the process offers in manufacturing costs in isolated works and places where coal is expensive.

Other advantages are the cleanliness of the process and the avoidance of manual handling of fuel.

Offices in Icing Sugar

One of the exhibits at this year's Hotel and Catering Exhibition at Olympia was a giant detailed scale model in pastillage of the new main offices in London for the Royal Dutch/Shell Group of oil companies. These offices, which include a 26-storey tower block, are now under construction on the South Bank of the Thames.

Weighing 150 lb, the model was 75 inches long, 29 inches wide, and its tower approximately 27 inches high. The total weight of icing sugar used, including wastage, was 2 cwt. It was made in three months by 22-year-old Miss Ann Wilbraham under the supervision of head chef E. E. Ross of Shell's Catering Division. There were 4800 windows and each window sill was added by hand, an operation which took 5 weeks.

Miss Wilbraham, a student attached to the Catering Division for a year as part of her studies for an Institute of Management Association examination, spent a year at the Gloucestershire Training College of Domestic Science before joining Shell.

A Shell photograph

The pastillage model of the future main offices in London for the Royal Dutch/Shell group

Six Australian Oil Search Subsidies Approved

The third Oil Search Newsletter, issued by the Office of the High Commissioner for Australia in the United Kingdom, reports that the Australian Minister for National Development, the Hon. W. H. Spooner, has announced that six oil exploration companies have had their drilling projects approved as qualifying for inclusion in the 1957–58 Commonwealth Petroleum Search Subsidy programme. The amount of the subsidy for each company and the conditions under which grants were to be made were not yet determined, but the names of the companies and some details of the locations of their qualifying operations are given below.

West Australian Petroleum Pty Ltd would be operating at Samphire Marsh, Western Australia. The marsh lies on the southern edge of the Canning Basin, but nothing is known of the depositional conditions of the area. Recent geophysical surveys indicated a structural feature covered by 8000–10,000 ft of sedimentary rocks of unknown age and type.

The proposed drilling programme of Santos Ltd at Cordillo Downs, South Australia would penetrate the Cordillo Sub-Basin which is part of the Great Artesian Basin. Determination of the thickness of sedimentary rock in this area would greatly assist the oil search.

Australasian Petroleum Co. Pty Ltd proposed to drill a stratigraphic hole at Puri, the only possible site for investigating this part of the Papuan Basin. The Basin contains great thicknesses of marine sedimentary rocks and many structures favourable for the accumulation of petroleum are known. Gas in large quantities has been found in at least two holes.

Papuan Apinaipi Petroleum Co. Ltd would drill a hole to basement at Kaufana on the coastal plain about 60 miles north-west of Port Moresby. Geologically the area forms a major part of the eastern portion of the Papuan Basin, but nothing is known of the rocks at depth.

Associated Australian Oilfields N.L. proposed a stratigraphic hole to penetrate the Carpentaria Basin, an area which should be thoroughly tested as part of the search for oil in Australia. The drilling should permit determination of the ages and types of rocks, the depth to basement, the occurrence of marine sediments, and the depositional conditions.

Clarence River Basin Oil Exploration Co., N.L. proposed to drill a hole in the northern part of the Torrens Basin at Pimba, South Australia. This is a small basin where oil exploration has started only in recent years. Little information is available on the north-eastern section and the company's plans will remedy this scarcity.

Senator Spooner also announced that twenty-two applications for the subsidy had been received and in the current year a total of £A300,000 had been approved for subsidies. This was expected to increase in subsequent years to £A500,000.

The recommended drilling programme would be determined taking into account the importance of the sedimentary basin in which the proposed drilling operation would be located, the value of the geological information likely to be gained, and the availability of funds.

The Oil Search Newsletter also states that since the beginning of this century expenditure on the search for oil in Australia has been £A51 million, £A33 million of which has been spent since 1953. Almost half of this has been in New Guinea, and a quarter in Western Australia. Production of oil and gas has been small and restricted to Roma, Queensland, Lakes Entrance, Victoria, Rough Range, Western Australia, and Balmain, New South Wales. At Roma, before the gas supply failed, about 20,000 gallons of condensate were recovered together with some crude oil.

At Lakes Entrance 115,000 gallons of oil were obtained from bores between 1934 and 1940 and 173,000 gallons from the shaft between 1948 and 1951. At Rough Range in 1953 oil flowed at 16,800 gallons a day. At Balmain methane gas from an abandoned colliery was compressed into steel cylinders and used in motor vehicles during the war.

The British Group for Computation and Automatic Control

As recorded in the February IP Review, an organization known as the British Conference on Automation and Computation, has been established by a consortium of 23 scientific societies. The conference is divided into three groups. The group for Computation and Automatic Control was constituted last December, and a second group, that for the Engineering Applications of Automation, whose member societies include the Institute of Fuel and the Royal Aeronautical Society, has now been set up.

Officers of this group are: Dr D. F. Galloway, a member of Council of the Institution of Mechanical Engineers, as chairman; J. S. Brough, and Sir Walter Puckey (past-president of the Institution of Production Engineers) as vice-chairmen; and B. G. Robbins (secretary of the Institution of Mechanical Engineers) as secretary.

Esso Expansion at Cardiff

Plans are well advanced on the expansion of Esso's distribution depot at Victoria wharf, Cardiff. The project is estimated to cost £200,000.

The development includes erection of twelve large storage tanks, up-to-date boiler and pumping equipment, and greater loading facilities for road tankers which will operate in a wide radius from Cardiff. A modern office block, with canteen facilities, will also be erected.

Cardiff has been an important centre for petroleum products since the early days of the industry in Britain. Esso Petroleum Co. Ltd have operated there since the turn of the century.

Greater Use of Industrial Instruments Foreseen

Speaking at the Annual Luncheon of BIMCAM, S. P. Chambers, C.B., C.I.E., senior deputy chairman of ICI Ltd, forecast a decline in the number of small inefficient hand-run plants, and as firms increased in size and amalgamations took place, the drive for industrial instruments and their better use would go forward. He also mentioned Sir Alexander Fleck's report that the incident at Windscale would not have happened had there been better understanding of the instruments and had they been more conveniently placed.

The chairman of BIMCAM, E. W. Wilson, stated that the Association's exports in 1957 were expected to exceed £15 million out of a total turnover of £35 million.

Finally T. E. Goldup, president of The Institution of Electrical Engineers, stated that measurement and control were the most important factors in modern industry, but the shortage of technical man-power at all levels was a great limitation on industrial progress.

First Shipment of Oil from Nigeria

A Shell photograph

Alhaji Abubakar Tafawa Balewa, Prime Minister of the Federation of Nigeria, pressing the button that started the oil pumping from Shell-BP's tank farm, Port Harcourt, to s.t.s. Hemifusus *anchored offshore*

The first cargo of crude oil to be exported from Nigeria was loaded on the Shell tanker *Hemifusus* at Port Harcourt on 17 February for delivery to Shell's Pernis refinery.

The oil was obtained from two oilfields at Oloibiri and Afam, referred to on p. 133, which are being put on test production for several months by the Shell-BP Petroleum Development Co. of Nigeria Ltd to determine their economic potentialities.

In an intensive search for oil begun 21 years ago and extending over 40,000 square miles of Nigeria, some £27 million has been spent and more than £10 million is earmarked for 1958. However, so far evidence of sufficient oil to ensure that the venture will be profitable for Nigeria and the Company has not been found.

Shell-BP have drilled nineteen exploration wells, and in addition to the oil-bearing regions of Oloibiri and Afam, have discovered a find at Soku.

Oil is being pumped to Port Harcourt from Afam at the rate of about 2500 b.d., and on completion of a 10-inch pipeline from Oloibiri to Port Harcourt it is expected that the total figure will be 6000 b.d.

Future output will depend on the decline rate of existing wells and on the productive capacity of any further successful appraisal wells.

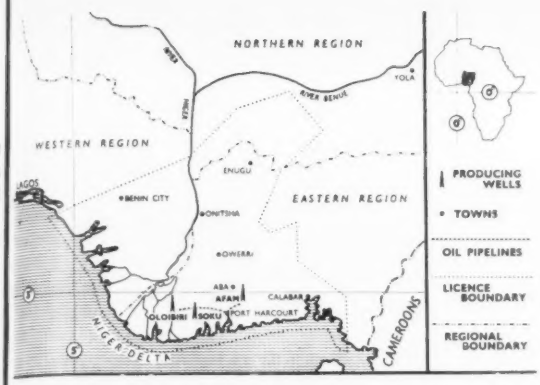
At present Shell-BP have five drilling strings and seven seismic parties in operation. The number of drilling outfits is expected to increase to nine by the end of the year, and includes two drilling barges for operations in the swamps.

At the ceremony to mark the first shipment of oil the Federal Prime Minister, Alhaji the Hon. Abubakar Tafawa Balewa, affirmed that the whole of Nigeria rejoiced in this further step towards the prosperity and welfare of its people. The Minister of Lagos Affairs, Mines, and Power, the Hon. Alhaji Ribadu, said the discovery of oil in Nigeria was a major contribution not only to the wealth of the country but also to the needs of the world.

Representatives of the Royal Dutch/Shell and BP Companies also spoke and messages of congratulation were received from the Governor-General of the Federation, H.E. Sir James Wilson Robertson, The Premier of the Eastern Region, the Hon. Nnamdi Azikiwe, and the Federal Minister of Commerce, the Hon. Dr K. O. Mbadiwe.

A Shell photograph

Alhaji Abubakar Tafawa Balewa, Prime Minister of the Federation of Nigeria, being greeted by Captain G. A. C. Nelson, master of s.t.s. Hemifusus. *He is followed by F. J. Stephens, a managing director of the Royal Dutch/Shell Group, and Captain Thistlethwaite, Shell-BP's marine superintendent in Port Harcourt*



Sketch map of Nigeria showing activities of the Shell-BP Petroleum Development Company of Nigeria Ltd

New Nigerian Oil Find

A new oil find has been made in Eastern Nigeria—in the swamp and mud of the Niger Delta at Soku, Rivers Province, 50 miles west of Port Harcourt.

This is the third oil-bearing region discovered by Shell-BP in its search extending over 40,000 square miles of Nigeria, where some £27 million has now been spent in exploration activities. Of this total, almost £20 million has been spent in the last four years.

The two other oil-bearing areas are at Oloibiri, also in the Niger Delta and 45 miles due west of Port Harcourt, and at Afam, in the "bush" country, 20 miles north-east of that city.

Soku is the seventeenth exploration well drilled in Nigeria. Of the previous sixteen, seven encountered shows of oil, of which so far three only, at Akata, in Calabar Province, east of Port Harcourt, Oloibiri, and Afam have been encouraging enough to warrant appraisal. This type of drilling showed there was little likelihood of oil being present in commercial quantities at Akata.

Appraisal of the Oloibiri and Afam structures is still in progress and oil from the testing of these wells is now arriving in Port Harcourt by barge and pipeline.

New £800,000 Plant at Stanlow

Work on a new plant for production of an important aviation gasoline blending component is in progress at Stanlow refinery, Ellesmere Port, Cheshire.

Costing £800,000 and designed by Universal Oil Products Company this new Udex unit, as it is called, is expected to be in operation by mid-1958. It will use as feedstock products from the nearby £3½ million platformer unit completed in 1953. The design incorporates six columns, the two tallest being the 120 ft solvent stripper and the 77 ft extraction column.

Operated by Shell Refining Company Ltd, Stanlow refinery has a crude oil throughput of 5,200,000 tons p.a.

The new unit will be of the solvent-extraction type using special solvent mixture. The platformate feedstock will be extracted with this glycol mixture which preferentially dissolves the aromatic components of the feedstock. The aromatic extract is distilled off from the solvent and used in aviation gasoline, whilst the insoluble non-aromatic portion, or raffinate, will be used as an additional feedstock for other processes.

New Production Research Affiliate for Standard Oil

Standard Oil Co. (New Jersey) has formed a new production research affiliate to direct its geological, geophysical, and production research, previously carried out under contract by The Carter Oil Co.

The new affiliate, known as Jersey Production Research Co., has taken over Carter Research Laboratories in Tulsa, Oklahoma. All existing patents, processes, and agreements relating to oil exploration and production will be assigned to the new company. Its formation was dictated by the great increase in growth and importance to the Company of production research.

The new company will engage in developing more efficient and economical methods of finding and producing oil and co-ordinating such work with Jersey's affiliates in U.S.A. and overseas.

Activity at the 20-acre Tulsa laboratories, established in 1935 under Carter Oil's direction to conduct work for Jersey Standard, is currently divided into ten sections—production research, production engineering, geological research, recovery research, recovery engineering, geochemical research, geophysical research, geophysical engineering, drilling research, and technical information.

A BP photograph

Bottom centre tank framing of vessel No. 1842, *which is the first of three tankers of* 34,500 *dw tons being built in the yards of Cantieri Riuniti Dell `Adriatico at Trieste for BP Tanker Company, the shipping organization of The British Petroleum Company*

U.S. Bureau of Mines Annual Report

Although mainly concerned with the activities and problems of the mineral industries, the 1957 Annual Report of the U.S. Bureau of Mines, which has recently been published, contains items of interest also to the oil industry.

Data supplied by the Bureau helped in the drilling of 100 new producing wells in a 34-year old Arkansas oilfield. Research was continued on solid, liquid, and gaseous fuels and on methods to increase recovery of ores, coal, and petroleum.

During the Suez crisis facts were provided for use by different agencies in authorizing rearranged petroleum production and distribution patterns.

The Bureau's petroleum-production engineers discussed the Bureau's research programme with leaders at industry research centres; these discussions will be reflected in greater emphasis on basic research and survey-type reporting. In addition, 274 analyses were completed of domestic and foreign crude oils, including 14 from the Middle East.

Although the Board produced more helium than in any previous year it was unable to meet all demands. By the end of the year some of the new units at the expanded Exell, Texas, helium plant were in operation, and the increased output from this plant is expected to help the Bureau meet essential demands for the next few years.

Increasing use of helium, limited reserves of helium-bearing natural gas, and sale of a growing volume of such gas for use as fuel without treatment to remove the helium caused concern lest it may be impossible to meet helium demands after 1975–80 unless prompt conservation measures are taken. In co-operation with other Government agencies the Bureau is working on the problem of developing ways to prevent loss of remaining helium resources.

Training Navigating Apprentices

The BP Tanker Company's training scheme for navigating apprentices, which covers a four-year indenture period, provides instruction in all practical and theoretical aspects of an officer's responsibilities.

The apprentices, numbering some 300, travel most of the world's sea routes to gain practical experience in preparation for their first professional examination to qualify as navigating officers.

The illustration shows the wheelhouse of BP's 32,000-ton tanker *British Glory* and the apprentice in the foreground is taking down the times of the engine movements.

Oil India Limited

On 14 January R. P. Smith, managing director of The Burmah Oil Company Ltd, and Sri K. K. Sahni, joint secretary of the Steel, Mines and Fuel Ministry, signed an agreement for the formation of a rupee company to develop the new oil areas of Brahmaputra Valley of Upper Assam.

The areas concerned are those in which Assam Oil Company has recently discovered oil at Nahorkatiya-Hugrijan and Moran. To date 36 wells have been drilled, 6 of which are in the Moran area and the seventh well at Moran was commenced in January. Not all these wells have proved to be oil-bearing but present indications suggest that the two areas are capable of producing about 2½ million tons of crude per annum.

The name of the new rupee company will be Oil India Limited with an authorized capital of Rs. 50 crores in 500,000 shares of Rs. 1000 each. Two-thirds of the capital will be supplied by the Burmah Oil Company and one-third by the Government of India.

Digboi Batori states that incorporation and registration formalities are proceeding.

New Platforming-Unifining Unit in Japan

Japan's first combination UOP platforming-unifining unit has gone on stream at the Yokohoma refinery of Asia Oil Co.

The unit has a design capacity of 1500 b.d., and the unifining section serves as a pretreater for the platforming operation and is processing naphtha derived from Middle East crudes. The platformer, designed to produce a 90 clear octane blending component, is the first catalytic reforming unit in Japan to produce reformate of this octane quality.

Universal Oil Products Co. designed and engineered the combination unit and licensed it through Japan Gasoline Co. Ltd, their licensing agent in Japan, who did the detailed design and construction.

Gilsonite may be Applied to Shale Industry

Successful exploitation of gilsonite, a naturally occurring solid hydrocarbon, is re-focusing attention on shale oil possibilities, according to the Petroleum Information Bureau (Australia).

At present high-grade gasoline, fuel oil, and high-purity metallurgical coke are being economically processed from gilsonite in the United States by an oil company which claims that shale oil can be directly competitive with American-produced crude oil.

The same company is now testing shale samples from Otago, New Zealand, to determine the possibility of oil production there. Shale deposits in there are estimated at 2000 million tons, of an average content of 13 gallons of oil per ton, equivalent to about 100 million tons of crude shale oil.

New Oil Well in Assam

Oil has been struck at Moran well No. 6, the latest well in the Assam Oil Company's exploration and drilling programme in the Brahmaputra Valley.

The new well was completed on 1 January at a depth of 11,622 ft in the record time (for Moran) of 40 drilling days. Production tests of the well are very promising.

Of the six wells completed at Moran four are capable of oil production and two are failures. Drilling is proceeding at well No. 7 and other locations are being selected.

Socony Mobil to Build Venezuelan Refinery

Socony Mobil Oil Company Inc. announced recently that its Venezuelan affiliate is to build a wholly-owned $28,000,000 refinery for completion late next year. The new installation will be at El Palito, about eight miles west of Puerto Cabello, at the terminus of the 210-mile-long Barinas-El Palito crude oil pipeline, which the company completed last November. Designed for an immediate capacity of 100,000 b.d., this pipeline was built to carry crude oil from the newly discovered Silvestre field in Western Venezuela to the North coast.

The new refinery will have an initial capacity of 40,000 b.d., with provision for future expansion, and will produce the whole range of petroleum products.

First Middle-East Platforming-Unifining Unit on Stream

The first combination UOP platforming-unifining unit in the Middle East has gone on stream at the 211,000 b.d. refinery of the Bahrain Petroleum Co. Ltd, a member of the Caltex Group.

Design capacity of the new unit is 11,000 b.d. with the unifining section serving as a pretreater for the platformer. The unit is set for an alternate operation—processing either 30 per cent cracked naphtha and 70 per cent straight run naphtha or only straight run naphtha which boils in the range of 195–340°F. The platformer is designed to produce a high octane blending component.

Electronic Computing System for Shell London Office

A high-speed electronic computing system has been ordered by Shell to solve complex mathematical problems in the planning of economic activity. It will be installed in the London Office and used for special calculations covering commercial aspects of all activities from exploration to marketing. It is expected to be in full operation early in 1959.

Based on the Ferranti "Mercury" machine with additional punched card, magnetic tape, and high-speed printing units, the system will be one of the largest in the world to be used mainly for operational analysis. It will also be one of the fastest systems in Europe for electronic processing of data.

The equipment will be able to store the equivalent of more than 60,000,000 decimal digits at a time, and the computer itself will perform up to 16,000 individual operations per second.

The present order has been largely influenced by Shell's successful experimental work over the last three years on the Ferranti electronic computer in their Amsterdam laboratory.

New Salary Scales for Chemists

The British Association of Chemists has issued a new scale of minimum salaries for chemists and chemical assistants.

The new recommended salaries show increases ranging from £13 p.a. for junior laboratory assistants in the age group 16 to 20, to £50 p.a. for qualified chemists who must have at least a Higher National Certificate in chemistry. No ceiling rate is quoted for senior chemists, but their minimum has also been raised by £50 p.a.

The Association points out that many firms will offer significantly higher rates than those set out in the new scale.

Further details of these increases can be obtained from the British Association of Chemists, 14 Harley Street, London, W.1.

Another Esso Bunkering Tanker Launched

An all-welded bunkering tanker for the Esso Petroleum Company was recently launched from Scarr's shipyard of Richard Dunstan Ltd at Hessle, near Hull. The ship, which is of 1285 dw tons, was named *Esso Lyndhurst* by Mrs Worcester, wife of A. T. Worcester, costs and operations manager of Esso Petroleum Co. Ltd.

The vessel is generally similar to *Esso Poole* and *Esso Brixham* but has a dead weight greater by 215 tons, an overall length of 208 ft, and a moulded breadth of 34 ft. She is propelled by an English Electric turbo-charged four-stroke diesel engine of 1000 bhp, which drives a single screw through reduction gearing.

She will augment the Company's fleet of bunkering ships in Southampton Water, and since a high discharge capacity is essential for this type of work, special attention was paid to the pumping installation. Two Stothert and Pitt positive displacement pumps are provided and they are powered by McLaren auxiliary engines.

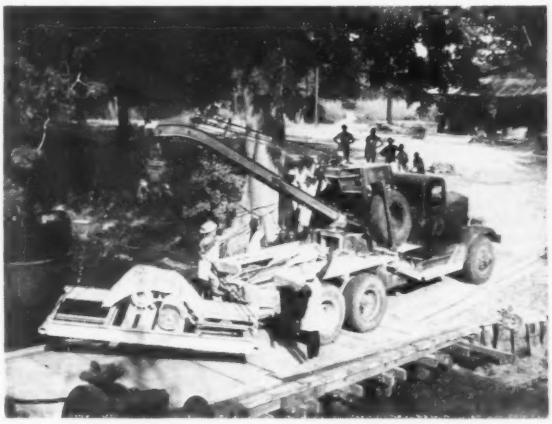
Ships that *Esso Lyndhurst* will bunker include the Queen liners of the Cunard line. She will also deliver fuel oil from the Fawley refinery to the C.E.A. power stations at Marchwood and Poole.

Drilling in Turkey

Following four years reconnaissance and intensive exploration in Turkey, drilling began recently on a new deep test well in Thrace, north-west of Istanbul. Known as Terzili I, the well is Shell's first in Turkey. The drilling is being carried out under contract by Keir and Cawder-Arrow Drilling (United Kingdom) Ltd, whose headquarters are at Bishopbriggs, Glasgow.

The only known Turkish oil reserves lie in the nationally owned fields in the south-east, in which the Government has a majority holding.

Oil Search in Senegal



A BP photograph

The Société des Petroles du Senegal in which the BP Group has a 50 per cent interest is to undertake drilling at Casamance, south of Senegal. The derrick and most of the material for drilling was brought in sections from Iraq to Dakar. It was moved from Dakar to Balandine by the Soulac, *a former landing craft. Equipment is shown above being unloaded from the* Soulac *at Balandine*

Exhibitions and Conferences

European Congress of Chemical Engineering

The programme of the European Congress of Chemical Engineering has now been published, and indicates the scope and nature of the congress. More than 230 papers by 18 countries have been announced and 950 firms from 14 countries will be exhibiting.

The programme contains details of the following:—

ACHEMA 1958, the 12th Chemical Engineering Exhibition and Congress at Frankfurt (Main) from 31 May —8 June. The theme will be "Nuclear Science and Technology", and papers and lectures will be presented in addition to the display of products by German and other manufacturers.

The 2nd Congress of the European Federation of Chemical Engineering, at Brussels, 28-29 May, and at Frankfurt, 31 May—8 June.

The 2nd Congress of the European Federation of Corrosion.

Special meeting and lectures 1958 of the Gesellschaft Deutscher Chemiker.

The annual meeting of the DECHEMA Deutsche Gesellschaft für chemisches Apparatewesen.

The first annual meeting of the Isotopen-Studien-Gesellschaft.

A special meeting of the Deutsche Gesellschaft für Arbeitsschutz in connexion with its 50th anniversary celebration.

The programme may be obtained from DECHEMA Deutsche Gesellschaft für chemisches Apparatewesen, Frankfurt (Main) 7, Rheingau-Allee 25 (Postfach).

Summer School on Oilfield Reservoir Engineering

In 1956, following discussions initiated by the British Petroleum Co., it was decided to hold a summer school in oilfield reservoir engineering in the Department of Chemical Engineering at the University of Birmingham.

This course, which is residential and lasts four weeks, has become an annual event and the 1958 school begins on 7 July and concludes on 1 August.

An intensive course of study, suitable for practising petroleum production engineers from technical staffs of oil companies, is provided by lectures by members of the University staff who cover and review in detail the progress made in this field. Other lecturers are from oil companies, and the course is under the supervision of the senior lecturer in the School of Petroleum Production Engineering of the University. Participants in the course are allocated to study groups for investigation of specific major engineering studies and for tutorial work.

Further information can be obtained from H. Gilmour, Petroleum Production Department, the University, Edgbaston, Birmingham, 15.

Standardization Meetings 1958

Among the meetings concerned with the compilation of technical and engineering standards, announced by the American Standards Association, are two which will be held in Europe during the summer.

The first is the Triennial Meeting of the General Assembly, Council, and fifteen technical committees of the International Organization for Standardization (ISO). This will take place at Harrogate from 9–21 June.

The second is the Annual Meeting of the International Electrotechnical Commission (IEC), at which delegates will be guests of the national standards body of Sweden (Sveriges Standardiseringskommission). The meeting will be held in Stockholm from 1–16 July.

Symposium on Theoretical Organic Chemistry

A Symposium on Theoretical Organic Chemistry, arranged by the Chemical Society under the auspices of the Section of Organic Chemistry of the International Union of Pure and Applied Chemistry, will be held in London from 15–17 September.

Known as the Kekulé Symposium, it commemorates the centenary of Kekulé's paper "On the Constitution and Metamorphoses of Chemical Compounds and on the Chemical Nature of Carbon".

Discussion will be arranged under three main headings—Chemical Binding and Structure, Nucleophilic Reactions, and Electrophilic and Homolytic Reactions.

The programme and application forms are obtainable from the general secretary, The Chemical Society, Burlington House, London, W.1.

National Association of Corrosion Engineers Conference

The Annual Conference and Exhibition of South Central Region, National Association of Corrosion Engineers will be held at the Roosevelt Hotel, New Orleans, from 20–24 October. The technical programme will include symposia on oil and gas production, marine, pipeline, utilities, and process industries corrosion problems.

Meetings of several NACE technical committees, principally those in the petroleum field, will be held from 20–22 October, and symposia will be given on 23 and 24 October.

F. A. MacDougall, Shell Oil Company, New Orleans, is general chairman, and W. F. Oxford, Jr, Sun Oil Company, Beaumont, Texas, is technical programme chairman.

The Northeast Region of NACE has announced a six-symposia programme for their meeting in Boston from 5–8 October.

Further details of these events can be obtained from A. R. Campbell, executive secretary, National Association of Corrosion Engineers, 1061 M & M Building, Houston 2, Texas, U.S.A.

Symposium on Microchemistry

Organized by the Midlands Section and Microchemistry Group of the Society for Analytical Chemistry, under the patronage of the International Union of Pure and Applied Chemistry, a Symposium on Microchemistry will be held at Birmingham University from 20–27 August.

Programmes and application forms are available from the Honorary Secretary: W. T. Elwell, F.R.I.C., ICI (Metals Division) Ltd, P.O. Box No. 216, Research Department, Kynock Works, Witton, Birmingham 6.

Envelopes should be marked "Symposium".

Summer School on Distillation Techniques

A summer school on distillation techniques will be held in the Department of Chemical Engineering at the Loughborough College of Technology from 15 to 24 July.

The course will cover the major design techniques in the field of distillation up to or beyond the level of the usual undergraduate honours course.

The syllabus is divided into three parts. In the first part, on equilibria and thermodynamics, the lecturers will be H. K. Suttle, and Professor S. R. M. Ellis of Birmingham University. The two lecturers in the second part, on stagewise calculations, will be Dr W. S. Norman of Manchester College of Science and Technology, and W. L. Brayley. Three lecturers deal with the third part, on plant design. They are Dr D. C. Freshwater, Dr N. J. Hassett, and W. F. Calus. Parts I and III will be extended by practical work in the laboratories of the Department.

The fee for the course, including residence at the College hostel, is 30 guineas.

Application forms and other details are obtainable from The Registrar, Loughborough College of Technology, Loughborough, Leics.

Production Exhibition and Conference

The 1958 Production Exhibition and Conference will be held at Olympia, London, from 12 to 21 May. It will be opened by The Rt Hon. Lord Mills, K.B.E., Minister of Power, who will also give the opening address to the Conference.

The exhibition is sponsored by the Institution of Production Engineers and it will be based on six main sections: Production Control; Production in Metals; Services and Aids to Production; Research and Development; Training and Careers; and Automatic Production.

The conference, which takes place concurrently with the exhibition, has six sessions dealing with: Selling in World Markets; The Economic Background; Cybernetics; Operational Research Case Studies; Designing Machines for Electronic Control; Automatic Equipment for Jobbing Work; and Human Relations in Industry.

Details of the conference and preprints of any paper to be presented can be obtained from the Conference Secretary, The Institution of Production Engineers, 10 Chesterfield Street, London, W.1. The charge for each preprint for each session is 5*s*., but this includes the cost of a season ticket to the exhibition.

Postgraduate Course in Production Engineering

A full-time postgraduate course in Production Engineering, organized by the Mechanical Engineering Department of Imperial College of Science and Technology, London, S.W.7, will commence in October.

The course will be of one year's duration and successful candidates will be awarded the D.I.C. Five subjects will be covered. These will be Production Engineering; Industrial Engineering; Industrial Materials; Industrial Applications of Statistics; and Industrial Administration.

In addition there will be a Special Task. It is a condition of the award of the D.I.C. that the student should submit a dissertation on an industrial or technological problem. The work for this dissertation may be done entirely in the College or partly with an industrial firm and arrangements can be made for students to spend about two months with selected firms.

Prospective entrants should possess an engineering degree and application should be made to the Registrar, Imperial College of Science and Technology, South Kensington, London, S.W.7.

Books and Films

Prospects for Increased Oil Supplies from Europe

The outlook is bright for rapid increases in supplies of oil from Europe's oilfields. This is the main conclusion of a new report prepared by the Oil Committee of the OEEC.

By the end of 1956 the contribution of Europe's hydrocarbon resources (oil and gas) was still comparatively modest —some 12 per cent of total requirements. Production of crude oil alone rose rapidly from 3·8 million tons in 1950 to 7·9 million tons in 1954. At the present rate of progress, it should amount to 14·5 million tons in 1959.

Since 1927 Western Europe has been dependent on foreign countries for filling a growing gap in its energy requirements, and has been forced to import increasing quantities of oil and coal with a consequent greater burden of finding the foreign currency to pay for them.

The OEEC urges that every possible means should be found to encourage prospecting for new sources of supplies and their rapid development.

Except for the greater part of the Scandinavian countries, most of the subsoil of Europe is made up of sedimentary basins. Areas where prospects are described as favourable represent 37·6 per cent of the total area of OEEC countries, including, for this purpose, Spain and Yugoslavia.

Since the war, vast accumulations of oil and natural gas have been discovered in Austria, France, Germany, Italy and the Netherlands; it is probable that other large fields of this kind will be discovered in the future.

The report, which covers all aspects of mining law and fiscal regulations, oil geology, exploration, and production, also contains an annotated oil and gas map of the OEEC area on a scale of 1/2,500,000, from tracings showing concession areas, and a table illustrating the distribution of oil and gas horizons by geological formations.

The Search for and Exploration of Crude Oil and Natural Gas in the OEEC Area, with maps and charts has been published in Paris by OEEC. Copies can be obtained from HMSO at the price of £3.

The Geophysical Journal

Published for the first time last month, the *Geophysical Journal* of the Royal Astronomical Society is a scientific quarterly devoted to dissemination of information on research in geophysics and related subjects.

It was started because rapid developments in geophysics called for a journal published at short intervals and containing papers on all the wide range of subjects involved.

The new Journal contains original papers, short notes, and letters, articles on the progress of geophysics, book reviews, and reports of geophysical discussions. The *Geophysical Supplement* to the *Monthly Notices* of the Royal Astronomical Society is also incorporated in the journal.

The *Geophysical Journal* is edited by Dr A. H. Cook and Dr T. F. Gaskell, in collaboration with Dr R. A. Lyttleton, the geophysical secretary of the Royal Astronomical Society.

The subscription for a volume of at least four parts is £3 (post free) and remittances should be sent to the assistant secretary, Royal Astronomical Society, Burlington House, London, W.1.

Who's Who in the Gas Industry

Starting with a list of personnel at the Ministry of Power and the Gas Council, the 1958 edition of *Who's Who in the Gas Industry* continues with a comprehensive list of the chief staff appointments of Regional Gas Boards throughout Britain.

The names given range from those of chairmen, secretaries, and chief engineers to those of officials less well known, such as the Coke Sales Officer, the Statistician, and the Safety and Civil Defence Officer.

A useful alphabetical buyers' guide of products and services with makers' names and addresses, and an index of trade names supplement the information provided.

The booklet is little thicker than the average diary and slips easily into the pocket. It is published by the *Gas Times* and copies may be obtained from Arrow Press Ltd, 1 Stamford Street, London, S.E.1, at the price of 7*s*. 6*d*.

British Chemical Plant 1957

First published in 1922 and now issued biennially, the 1957 edition of *British Chemical Plant* forms an up-to-date guide to the multifarious products now marketed by the chemical plant industry in the United Kingdom.

Containing over 400 pages and numerous illustrations, the volume is divided into three sections. The first lists the names and addresses of members of the British Chemical Plant Manufacturers Association, and in many cases a country-by-country catalogue of their overseas agents. The second section carries the announcements of individual firms, and the third is devoted to a classified index of products and services, followed by a key in French, German, and Spanish.

For a publication dealing in chemical plant, the scope covered is surprisingly wide. Of particular interest to the oil industry are plant for the extraction of benzole, available from 21 manufacturers, tank gauging and sampling apparatus, liquid-flow control instruments where there is a choice of 12 firms, lubricating oil filters, and so on. Of less specific significance are such items as furnace control equipment, pneumatic handling plant, and steel roller shutters.

A limited number of copies of this book are available free from the British Chemical Plant Manufacturers Association, 14 Suffolk Street, London, S.W.1.

Good Neighbours

Almost everyone appreciates the benefits that modern road and air travel have provided in convenience and speed, and many people are aware that they stem from the internal combustion engine running on liquid fuels. However, the concomitant refineries for the processing of such fuels are accepted with less enthusiasm, and in some cases with an undisguised abhorrence, sometimes based on the fears of undesirable waste products being discharged over a wide area.

The oil companies are fully aware of this attitude and seek to reduce cause for offence. A new booklet, *Good Neighbours*, published by the Shell Petroleum Co. Ltd, sets out to explain some of the steps taken at a refinery to reduce or eliminate discharge of unpleasant wastes and odours.

Diagrams and photographs illustrate the text which briefly explains how amenities are preserved and dissatisfaction prevented, often at considerable cost.

British Standard for Marine Electric Motors and Generators

Prepared at the request of the committee of the Institution of Electrical Engineers responsible for the *Regulations for the Electrical Equipment of Ships*, BS 2949: 1958 deals with marine electric motors and generators (other than those used for propulsion) and rotary convertors. The minimum rating covered is 1 hp but no upper limit is set.

Alignment with BS 2613, *The Electrical Performance of Rotating Machinery* has been maintained as far as possible.

Copies, price 8*s*. 6*d*. each, can be obtained from BSI, Sales Branch, 2 Park Street, London, W.1.

Supplements to ASTM Standards 1957

The American Society for Testing Materials has recently published the 1957 supplements to the triennially issued book of ASTM Standards that last appeared in 1955.

The new supplements, in seven parts, give the latest form of 415 specifications, tests, and definitions which either were issued for the first time in 1957, or have been revised since their appearance in the 1955 book or 1956 supplements.

Each part costs $4 or the complete set $28. Of particular interest to the oil industry is Part 5 which deals with Fuels, Petroleum, Aromatic Hydrocarbons, and Engine Antifreezes. In 340 pages this includes 76 standards covering crude petroleum, motor and aviation fuels, kerosine and lubricating oils, greases, insulating oils, and diesel fuels.

Copies can be obtained from ASTM, 1916 Race Street, Philadelphia 3, Pa., U.S.A.

People and Plastics—Polyethylene

Produced by the Publicity Department of Bakelite Ltd for exhibition to the general public, the film *People and Plastics—Polyethylene* sets out to show some of the myriad everyday uses of polyethylene in home and industry.

The technical aspects of polyethylene manufacture are illustrated by clear diagrams of the method of extrusion and shots of the actual machines. The sound track of some of the machines in use heightens the realism of these scenes.

This 16-mm film, which is in colour, has a running time of 41 minutes, and copies are available on loan from Bakelite Ltd (Publicity Department), 12–18 Grosvenor Gardens, London, S.W.1.

Marking Containers

The scheme for marking containers of hazardous chemicals which was sponsored by the Association of British Chemical Manufacturers has now become well accepted and a second edition of *Marking Containers* has just been published.

The new edition has been completely revised and brought up to date and the list of chemicals for which warning labels are recommended has been considerably extended and now contains 331 different products.

An important change in the text is that now only one label size is recommended in place of the two previously suggested.

The scheme proposed by the Association has been adopted by most manufacturers in Britain and close contact has been maintained with the Manufacturing Chemists Association of America which has a similar scheme.

Copies of the book can be obtained from the Association of British Chemical Manufacturers, 86 Strand, London, W.C.2 at the price of 10*s*. post free.

Bitumen in Road Surfacing

Published by The Shell Petroleum Co. Ltd, *Bitumen in Road Surfacing* does not attempt to deal in theories, nor to cover details of road construction practices evolved in any particular country. It forms a general guide to overall practice in the use of bitumen and cutbacks in everyday road construction. Within this limitation it sums up the practical overseas experience of the Bitumen Department of the Company.

The book is not intended as a handbook of British practices. British Standards are not included and certain grades of bitumen mentioned are not available in Britain.

Copies of the book are being distributed free by all companies marketing Shell bitumen in more than eighty countries.

The Strategy of Research

The University of Southampton have printed as a conveniently sized booklet the fourth Fawley Lecture, delivered by Sir George P. Thomson, master of Corpus Christi College, Cambridge, to Southampton University last October.

The Fawley Foundation, established by the Esso Petroleum Co. in 1953, provides for a series of annual public lectures under the general title of "Science and Industry", with particular emphasis on important aspects of the application of scientific thought to industrial and social needs.

Sir George Thomson's subject was "The Strategy of Research", and he goes back to the earliest examples of abstract thought. After considering the attitude of the ancient Greeks he passes, *via* the history of scientific research in Britain, to current problems and practice, and concludes with a brief look at the future.

Specialist Conference on Fuel Research

The Second Specialist Conference on Fuel Research, to promote liaison between Government scientific organizations, was held in July 1956 and the report on the conference has now been published.

Among the subjects covered were existing facilities for training in fuel technology and for carrying out fuel research in the Commonwealth, the possibilities of collaboration between Commonwealth organizations in investigational work, and arrangements to initiate joint investigations in coke testing, coal grindability, and petrographical work.

The recommendations and a summary of discussion at the conference are contained in the report, *Second Specialist Conference on Fuel Research*, published by Her Majesty's Stationery Office at the price of 1*s.* 6*d.*

Information on Chemical Engineering

A series of concise news sheets containing results of research work and descriptions of new developments and trends in the field of chemical engineering form the *Dechema-Erfahrungsaustausch*.

Full details of this German technical periodical are contained in a pamphlet which may be obtained free from DECHEMA Deutsche Gesellschaft für chemisches Apparatewesen, Frankfurt (Main) 7, Postfach.

British Rubber Directory

The 1958 edition of the *Directory of British Rubber Manufacturers and Products* provides a comprehensive buyer's guide to the British rubber industry in English, French, German, and Spanish.

Over 600 products are listed under headings which include belting, hose, engineering components, adhesives, insulating materials for heat and sound, proofed fabrics, and tyres.

Designed primarily for overseas circulation the directory is free to overseas importers of rubber products. A limited number of copies are also available from the Federation of British Rubber and Allied Manufacturers, 43 Bedford Square, London, W.C.1, at the price of 25*s.* per copy (post and packing 3*s.* extra).

Oil and the Middle East

An assessment of world energy requirements and oil resources available with special reference to the Middle East is made in *Oil and the Middle East*, which has recently been published.

The booklet indicates sources of supply, rate of oil consumption, likely future demand, and details of world oil reserves, refining, and transport.

Copies can be obtained from the Commonwealth-American Current Affairs Unit, 37 Charles Street, Berkeley Square, London, W.1 at the price of 2*s.* (postage extra).

Mineral Industries Bulletin

A new bi-monthly publication covering the field of Colorado's minerals is now being published by the Colorado School of Mines.

Under the title *Mineral Industries Bulletin* the periodical is intended to supply current information on the mineral industry potential of the State of Colorado. Data will embrace articles and statistics on the elements of Colorado's geology and mineral resources, mining operations, production statistics, economics, and other aspects of the area's mineral industries.

Free copies of the bulletin are obtainable from the Department of Publications, the Colorado School of Mines, Golden, Colorado, U.S.A.

British Standards for Microchemical Apparatus

Three further parts of BS 1428 "Microchemical Apparatus" have recently been published, and a revised edition of Part A1 "Carbon and Hydrogen Combustion Train (Pregl Type)", which first appeared in 1950.

In the Part A1 revision, as a result of experience in the use of this apparatus, a silica combustion tube is specified in place of glass, an electric heater replaces the long gas burner, and simpler designs have been adopted for the pressure regulator, preheater, flowmeter, and absorption tube. Chloroprene (synthetic) rubber tubing is also accepted as an alternative to natural rubber tubing.

The specifications published for the first time are Part F1 "Filtration Apparatus for Microchemical Purposes", Part G2 "Vacuum Drying Ovens for Microchemical Purposes", and Part K1 "Vaporimetric Molecular Weight Determination Apparatus".

Copies of BS 1428 may be obtained from British Standards Institution, Sales Branch, 2 Park Street, London, W.1, at the following prices:

Part F1, 4*s.* 6*d.*; Part G2, 4*s.*; Part A1 (revised), 5*s.*; and Part K1, 4*s.*

Trade Literature, etc.

New Technique for Prefabricated Steel Buildings

Richard Costain Ltd and J. E. Lesser & Sons Ltd have introduced a new technique in prefabricated steel buildings, which utilizes cold-rolled high-tensile steel sections.

The new system, named the CieL system, because of its light weight is claimed to allow considerable economies in initial cost and savings also in foundation, handling, transport, and erection expenses.

The sections, with patented connexions, have an effective strength at least 50 per cent greater than hot-rolled mild steel, and from four to six times greater resistance to atmospheric corrosion.

The design conforms to BS 449 and spans up to 96 ft can be dealt with. The columns of the structure are standard R.S.J's and the wall cladding may be of steel, aluminium, asbestos, or other material.

Smoke Density Indicator

A new indicator has been developed by the Fuel Research Station, DSIR, to overcome some of the defects of viewers already in existence.

It consists of a special glowing element placed in the side flue and viewed through a column of flue gas from an observation window.

Maintenance is eased because there are no mirrors or glasses to be cleaned and the element itself is also self-cleaning.

Full details are obtainable from Shandon Scientific Co. Ltd, 6 Cromwell Place, London, S.W.7.

Solartron Progress in 1957

The following extracts from *The New Horizons of Discovery*, the Annual Review of the Solartron Electronic Group for 1957, give some indication of the Company's progress in the past year.

Export orders rose by 300 per cent and total orders by 50 per cent, compared with 1956.

More than 1000 oscilloscopes were sold. One model had been working continuously for 10,000 hours.

Radar simulator contracts were signed with three NATO countries.

The Solartron Electronic Reading Machine (ERA) can read 200–300 characters per second, and can reduce the cost of feeding a digital computer by 90 per cent.

The increased prosperity of the Company is also shown by the fact that many employees had achieved during the year a real advance in wages five times greater than the national advance in the manufacturing industries.

New BP Two-Stroke Oil

Shell-Mex and B.P. Ltd are now marketing a new lubricating oil for two-stroke engines.

Known as BP Energol Two-Stroke Oil, it is primarily for delivery through the BP Two-Stroke Petroiler Service.

Prices of the new mix (including the correct proportion of petrol) in the Inner Price Zones range from 5s. per gallon to 8½*d*. a pint.

Oil-Gas Plant for Scandinavia

After studying the various processes for the manufacture of town gas in European countries, Stockholm's Gas and Waterworks have placed an order with The Power-Gas Corporation Ltd of Stockton-on-Tees for two units of Segas plant (three-vessel design), each capable of producing 2 million cu. ft per day of town gas, using heavy oil or light distillate as feedstock.

This is the first large oil-gas plant for the manufacture of town gas to be ordered for Scandinavia. The Power-Gas Corporation Ltd and their licensees are installing similar units in the United Kingdom, Germany, Italy, Malta, and Hong Kong.

Industrial Photography Catalogue

The latest edition of the Kodak professional catalogue lists materials and equipment for commercial, industrial, and portrait photography.

Products described range from many grades of film, plates, and papers to cameras, still-viewing equipment, and lighting fittings.

Special sections are devoted to processing and workroom equipment and apparatus for document copying.

The catalogue can be obtained from Kodak Ltd, Kingsway, London, W.C.2.

Cathodic Protection for Viking-Johnson Coupled Pipelines

When cathodic protection is applied to a pipeline, the line must be electrically continuous, and if Viking-Johnson or similar electrically insulating couplings are employed, each joint has to be bonded to give the continuity.

Metal and Pipeline Endurance Ltd, Victoria Street, London, S.W.1 have evolved a bond, known as MAPELBOND, to give easy installation and very low resistance. It cannot cause damage to the internal coating of steel pipeline and permits cathodic protection to be applied at any time to a steel pipe, even when the coating is completely deteriorated, without the expense of locating and excavating the joints.

Positive Blowers

A new illustrated leaflet describes a range of positive blowers manufactured by W. C. Holmes & Co. Ltd, of Turnbridge, Huddersfield.

The blowers are of simple design, have no moving vanes, valves, springs or other small parts to work loose, and require no internal lubrication.

Tile-Suspended Arch Furnace Roof

Important advantages in ease of installation, gas tightness, and accessibility for replacement are claimed for the Incandescent-Laclede tile-suspended arch roof for furnaces.

Full details are given in a colour pamphlet published by the Incandescent Heat Co. Ltd, Smethwick, from whom copies can be obtained.

New Plastic Packing for Cooling Towers

Head Wrightson Processes Ltd, 24–26 Baltic Street, London, E.C.1 are to handle in Britain the new plastic packing designed by their American associates, Fluor Products Company of Los Angeles for the "Counterflo" cooling tower.

The new packing produces a greater cooling surface and an increased flow of heat transfer compared with the conventional packing, and the pressure drop is claimed to be low.

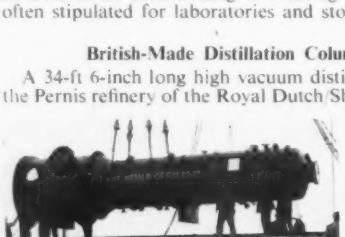
Air, Gas, and Liquid Dehydration Equipment

A range of equipment for dehydration of air, gases, and liquid is described and illustrated in a new leaflet issued by Burnett & Lewis Ltd, Redhouse Industrial Estate, Aldridge.

The equipment is applicable to many industries and is also very suitable in air-conditioning in creating a very low humidity, as often stipulated for laboratories and storage rooms.

British-Made Distillation Column for Holland

A 34-ft 6-inch long high vacuum distillation column for use at the Pernis refinery of the Royal Dutch/Shell Group has been made by Metal Propellers Ltd of Croydon.



The column, which weighs 12 tons, is a major unit of the new petrochemicals plant at Pernis, and also one of the largest and most complex vessels built of Monel metal in Great Britain.

The photograph shows the column being loaded at Dagenham on to the m.v. *Export II* which transported it to Holland as deck cargo.

New Warmth for the Flagship

A steel replica of H.M.S. *Worcester*, flagship of Admiral Benbow, which is permanently anchored off Greenhithe, has recently received an item of equipment undreamed of in the good admiral's days.

Presented by Todd Oil Burners Ltd of Finsbury Circus, London, E.C.2, a complete oil-burning unit now takes charge of the crew's needs for cooking, heating, and hot-water supplies.

Models and Plant Design

The use of scale models to communicate engineering concepts and to improve methods of designing process plants is discussed in a new leaflet "Models: New Route to Better Plant Design", published by The M. W. Kellogg Co. of New York.

It states that Kellogg's unique and highly successful system for planning with full-scale three-dimensional models is the result of a four-point development programme.

The Company uses models to resolve questions of plot arrangement, equipment handling, process flow, plant operation, and plant maintenance.

A new rapid push-fit model-making technique has been employed to simplify model construction and this also permits design personnel to work directly on the models and results in a single progressively advancing model representative of the design in any plant.

New models have improved plant design by acting as a master plan for an entire technical staff.

Copies of the leaflet are available from The M.W. Kellogg Co., 711 Third Avenue, New York 17, New York.

New Process Units at Grangemouth

The petroleum plant division of The Power-Gas Corporation Ltd, operating at 103–113 The Broadway, West Ealing, London, W.13, has recently been awarded a contract by BP Trading Ltd for the engineering and construction of three small process units at the plant of BP refinery (Grangemouth) Ltd.

The plants comprise No. 3 copper chloride unit, kerosine raffinate soda washery, and de-ethanizer unit.

Improved Spectrophotometer

A new prism, of synthetic fused silica, which is more transparent than quartz at wavelengths below about 2500 ångstroms, is now fitted to the Uvispek spectrophotometer.

The prism gives a better ratio between transmitted and stray light at short wavelengths and reduces the effect of stray light to negligible proportions at 2000 ångstroms and well below. It also extends the range down to 1850 ångstroms.

Designed for interchangeable prisms most models of the spectrophotometer can be fitted with the new prism. It is produced by Hilger & Watts Ltd, 98 St Pancras Way, Camden Road, London, N.W.1.

Electrode Holders

Following the introduction from America of the Jackson A.3.S electrode holder, Lincoln Electric Co. Ltd, of Welwyn Garden City, have commenced full-scale manufacture of two smaller models.

Both have crown channel type jaws of 98 per cent copper alloy, and are fully insulated with protection against accidental arcing.

One model operates at up to and including 30 A, has a weight of 14 oz, and is one of the lightest holders for ¼-inch electrodes.

The other operates up to 200 A and will handle ⅝-inch electrodes. Weighing only 9½ oz it is recommended for work in difficult places and for reducing operator fatigue.

New Precision Vacuum Oven

Griffin & George Ltd, of Wembley, announce that they are shortly putting into production a new precision vacuum oven.

Known as the Gardiner precision vacuum oven, the new product was developed in the Research Laboratories of Tate & Lyle Ltd for drying sugar syrups and molasses, but it can also be utilized wherever exact and reproducible results of experiments on drying losses from other materials, particularly of a labile nature, are required.

The sample under test is taken into solution and distributed over an aluminium powder extender contained in a sample dish. It is then heated under vacuum while a current of air or inert gas, dried to a water content not exceeding 0·0007 mg/litre, is bled over the surface. It is believed that use of this new oven will introduce into "moisture" determinations a new order of precision.

New Temperature Controller

A new temperature-controller the Thermal-trol type 750, has recently been introduced by Ether Ltd. It has an extremely wide range, being able to control temperatures between −328°F and +1832°F (−200°C and +1000°C) for electrical, steam, gas or oil-fired apparatus, with considerable accuracy and speed.

The temperature-sensitive element is a platinum-wire resistance, or thermo-bulb, in which the resistance changes in proportion to its temperature, thus causing an unbalanced condition in the a.c. bridge-circuit. A relay opens or closes an electrical circuit, depending on the phase angle of the input voltage to the amplifier. This system is independent of amplifier-gain and is extremely stable.

The instrument is not affected by vibration or ambient temperature, and is suitable for wall or panel-mounting.

Synthetic Grinding Fluid

A new illustrated industrial bulletin has been issued by Mobil Oil Co. Ltd.

It deals with Solvac 68, a clear type synthetic grinding fluid that may be used for precision grinding on cast iron, malleable irons, and wrought iron. It is also suitable for use with steels, aluminium, ceramics, and glass. Instructions on its use and a table of recommended strengths are included.

Copies of the leaflet are obtainable from Mobil Oil Co. Ltd, Caxton House, London, S.W.1.

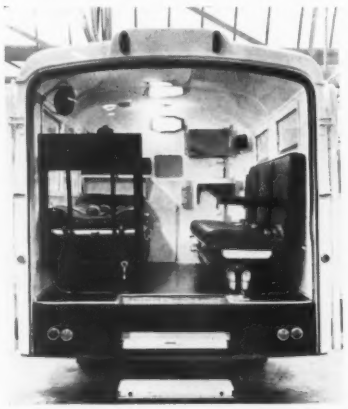
New Thermocouple Wire

Designed to meet exacting requirements of temperature measurement under extreme conditions is a new thermocouple wire now being marketed by Philips Electrical Ltd, Shaftesbury Avenue, London, W.C.2.

Four types are available for temperatures from −200° C to +1000° C and the wire can be bent to a curve of five times its diameter without earthing or shorting the cores. It has a low heat capacitance, requires no additional insulation, and is simpe to install.

New Type Ambulances for Borneo

First of their kind, two new ambulances were shipped recently to Brunei and Sarawak in British Borneo. One will be used by Brunei Shell at Seria, and the other by Sarawak Oilfields Ltd at Miri.



Seria, built on a narrow strip of reclaimed land along the coast of the South China Sea and one of the largest single oilfields in the British Commonwealth, has been the scene of an extensive building programme costing millions of pounds since the war. Although there are many bitumenized roads, the ambulances may have to be used over rough and swampy ground. The vehicles, which cost £1800 each, were designed specially for cross-country use by Herbert Lomas Ltd, ambulance specialists of Wilmslow, in collaboration with Shell engineers and the Rover Motor Company.

Although of small dimensions, they incorporate all the features of a modern road ambulance. The all-metal bodies are of alloy, with double roofs and are insulated between the outer and inner panels. Doors and window apertures are sealed against water and dust.

A standard 4-wheel-drive 107-inch Landrover chassis is used, but it is fitted with outrigged springing and both telescopic and André Telecontrol shock absorbers.

A towing attachment concealed under the rear step may be used to extricate the vehicle in the event of difficulty.

The ambulance carries a water tank with wash basin and a Stephenson Minuteman resuscitator which enables the first-aid personnel, in the absence of a doctor, to deal with cases of asphyxia, even in many cases involving other injuries.

New Petroleum Inhibitor

Universal Oil Products Co., Des Plaines, Illinois have introduced a new multi-purpose petroleum inhibitor.

Termed the Polyflo 100, the inhibitor is very efficient in minimizing deposits and stabilizing colour in diesel oils, distillate burner oils, and residual fuels. It is also claimed to give striking improvements in the thermal stability of jet fuels as measured by the CFR coker test.

Sunvic PHA School

A series of 1-week courses on the use of Pulse Height Analysers is being given by Sunvic Controls Ltd at Harlow, Essex.

The courses aim to provide detailed knowledge of the circuitry and functioning of the analyser, including servicing and fault-finding. Use of the instrument in nuclear physics research and radiation spectroscopy is also provided.

Differential-Pressure Orifice

George Kent Ltd, of Luton, have introduced a new orifice to their range of differential pressure producing devices.

Known as the Dall orifice, the new model is said to reduce the pressure loss on a system working on 100 in. water gauge instrument from 60 in. w.g. to 19 in.

The orifice is available in sizes for 6 to 24 in. pipes, and can be used with most gases, compressed air, and low-pressure steam.

American Earth-Moving Equipment for Britain

Clark Equipment International with their British associates, All Wheel Drive Ltd, have begun production in Britain of Michigan earth-moving and materials-handling equipment.

Michigan (Great Britain) Ltd is responsible for distribution and service in the United Kingdom and export to Commonwealth countries. Works and service depot is located at Yorktown works, Camberley, Surrey. The Home and Export Sales Division is at 3–5 Charles II Street, St James's Square, London, S.W.1.

Improved Commercial-Vehicle Lubricating Oil

A recent Mobil Automotive Engineering Memorandum (No. 1033/5801) describes the advantages of Delvac Special lubricating oil for road vehicles.

This oil is of SAE viscosity classifications 10W and 30 and satisfies both BS DEF-2101A and the API Service classifications MS, DG, and DM. It is claimed to reduce corrosive wear during start-up and to lessen combustion-chamber deposits.

Copies of the leaflet can be obtained from Mobil Oil Co. Ltd, Caxton House, London, S.W.1.

New Development Station Opened

To extend their activities in the chemical engineering and automatic-control fields, Constructors John Brown Ltd has set up a Research and Development Station on a 4-acre site at Leatherhead.

The Station will undertake sponsored development work for Government Departments and industrial organizations, and also for the Engineering and Construction Divisions of the Company.

It will deal with:—

(1) Process development and investigation of chemical engineering problems.
(2) Development and application of automatic control systems.
(3) Special problems in nuclear engineering.

Special attention has been given to development work requiring large-scale pilot plants which the Company is well equipped to build.

Material Handling Pump

Alfred Bullows & Sons Ltd, Long Street, Walsall, are now manufacturing under licence from the Binks Manufacturing Co. of Chicago a material handling pump, introduced to Britain early last year.

The pump enables paint to be used straight from a bulk container, and permits a much smaller circulating system being used.

The pump has been reduced in price and delivery is possible in six weeks of placing the order.

Microrecording

A company specializing in microrecording offers a variety of services.

It can supply a portable microfilm reader for use with any type of microfilm and which requires no special skill in operation. This is already employed by many libraries and organizations in Britain and overseas.

The company also manufacture a microcard reader and can undertake microfilming and microcarding.

Details can be obtained from Micro Methods Ltd, 17 Denbigh Street, London, S.W.1.

Forthcoming Meetings

THE INSTITUTE

(At 61 New Cavendish Street, London, W.1., 5.30 p.m.—tea 5 p.m.)

Recent Developments in Refining. W. J. Newby, B.Sc. **7 May**

IP ECONOMICS AND OPERATIONS GROUP

(At 61 New Cavendish Street, London, W.1., 5.30 p.m.—tea 5 p.m.)

1957 and its Implications for the Oil Industry. J. Senior **10 April**

IP ESSEX BRANCH

(At the Railway Hotel, Pitsea, 7.30 p.m.)

Free Piston Engines. Members of staff of Alan Muntz & Co. **25 April**

IP FAWLEY BRANCH

(At Esso (Fawley) Recreation Club, Holbury, 7.30 p.m.)

Recent Developments in Gas Making Processes. A. E. Haffner, A.R.C.S., F.Inst.F., M.Inst.Gas Eng. **11 April**

IP LONDON BRANCH

(At 61 New Cavendish Street, London, W.1, 6 p.m.—tea 5.30 p.m.)

Britain's Part in the Oil Industry. P. M. De Veulle and F. G. Thackeray. **29 April**

Summer Visit. **June**

IP NORTHERN BRANCH

(At Manchester College of Science & Technology)

Joint meeting with the N.W. Branch of the Institution of Chemical Engineers

Trends in the Petroleum Chemical Field. **24 April**

IP SCOTTISH BRANCH

(At North British Station Hotel, Edinburgh, 7.30 p.m.)

Paints applied to Petroleum Plant. **10 April**

IP STANLOW BRANCH

(At Blossoms Hotel, Chester, 7.30 p.m.)

Joint Meeting with the Institution of Chemical Engineers

Design and Manufacture of Heat Exchangers. E. A. Saunders and R. Parker. **16 April**

OTHER SOCIETIES

THE INSTITUTION OF MECHANICAL ENGINEERS

(At 1 Birdcage Walk, London, S.W.1.)

Petrol Injection. Three papers by E. Gay, E. W. Downing, Dr H. Heinrich and H. Stoll *4.30 p.m.*, **15 April**

Large Pipeline Projects. A. C. Hartley, C.B.E., B.Sc., F.C.G.I., M.I.C.E., M.I.Mech.E., F.Inst.Pet., M.A.S.M.E. *6 p.m.*, **25 April**

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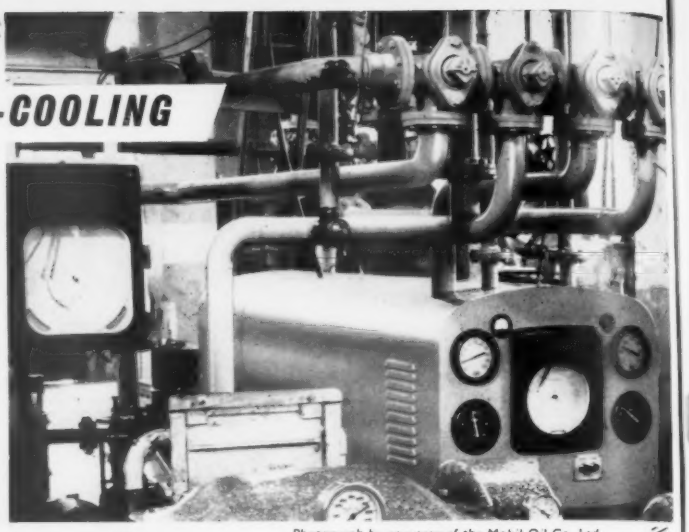

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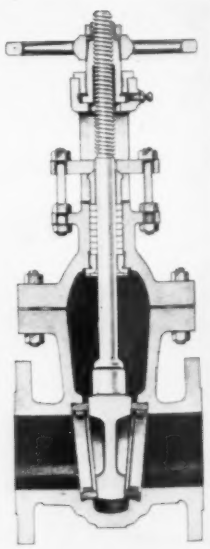
CLASS 150	2	6	¾	7	3¾	1/16	18¾
	3	7½	⅞	8	5	1/16	22¾
	4	9	15/16	9	6 3/16	1/16	27
	6	11	1	10½	8½	1/16	35¼
	8	13½	1⅛	11½	10¾	1/16	45
	10	16	1 3/16	13	12¾	1/16	53½
	12	19	1¼	14	15	1/16	60½
CLASS 300	2	6½	⅞	8½	3¾	1/16	20¾
	3	8¼	1⅛	11½	5	1/16	24¾
	4	10	1¼	12	6 3/16	1/16	30¼
	6	12½	1 7/16	15¾	8½	1/16	39¼
	8	15	1⅝	16½	10¾	1/16	47½
	10	17½	1⅞	18	12¾	1/16	56¾
	12	20½	2	19½	15	1/16	63¾



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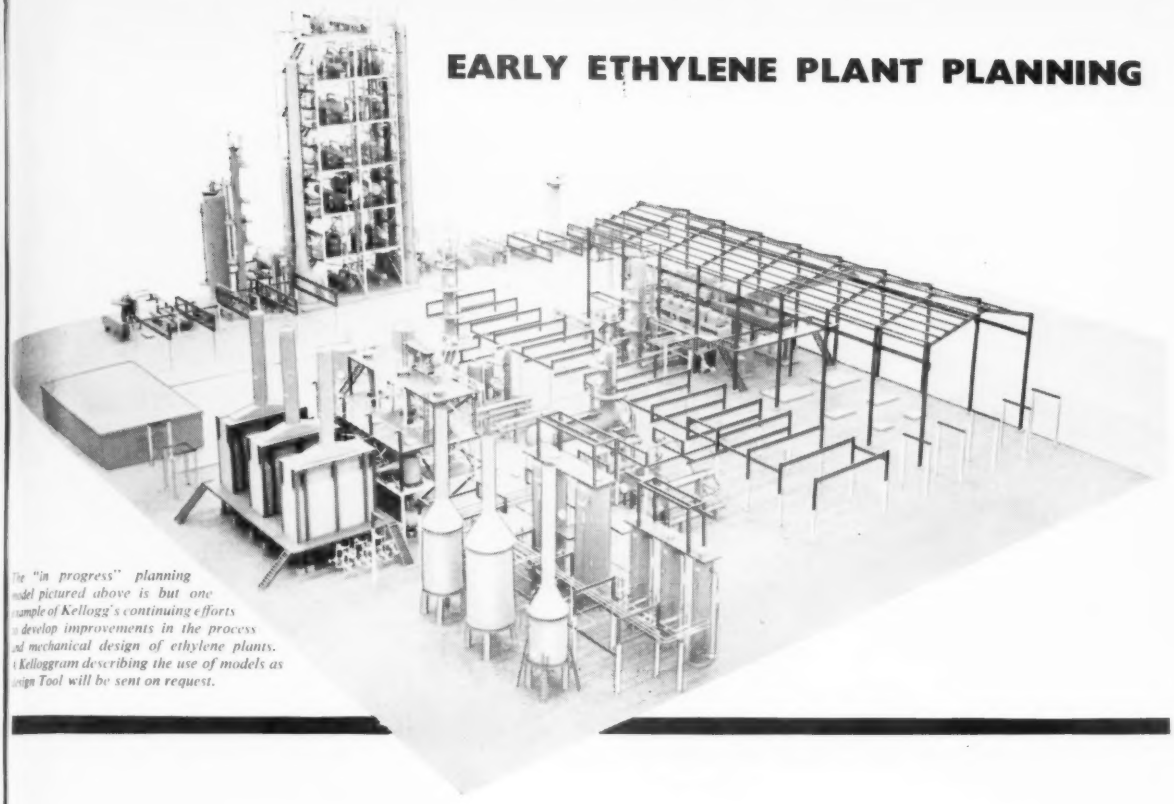

The "in progress" planning model pictured above is but one example of Kellogg's continuing efforts to develop improvements in the process and mechanical design of ethylene plants. A Kelloggram describing the use of models as Design Tool will be sent on request.

Your best plan for undertaking a new ethylene plant is to utilize the ethylene experience of the Kellogg organisation. This experience includes the process engineering and design engineering of seven ethylene plants for the leading petrochemical firms in England, France, Germany and Italy. The Kellogg ethylene experience also includes the engineering of the largest and most complex ethylene gas recovery and purification plants for major petroleum refiners in the U.S.A.

The Kellogg developed process for the direct production of ethylene by steam pyrolosis of petroleum fractions is an established technical and commercial success. This process permits considerable flexibility in feed stocks, ranging from ethane through propane and naphtha, to gas oils. The ratios of light olefines yields can be varied by changing the operating conditions of the process. An ethylene of 99.9% purity can be produced.

Kellogg International Corporation welcome the opportunity to explain how the Kellogg ethylene experience can be utilised by firms interested in producing or recovering ethylene and other olefines.

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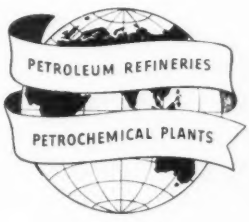

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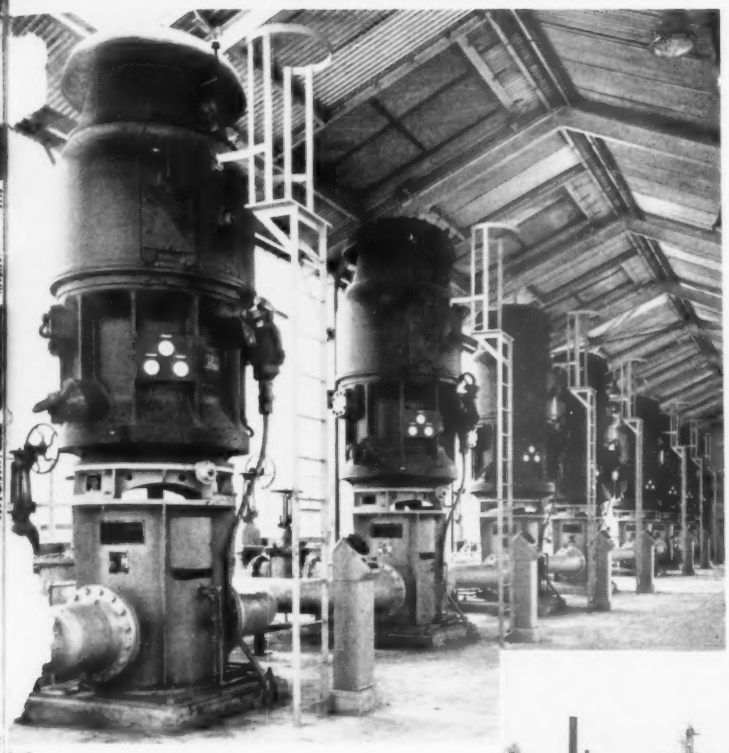
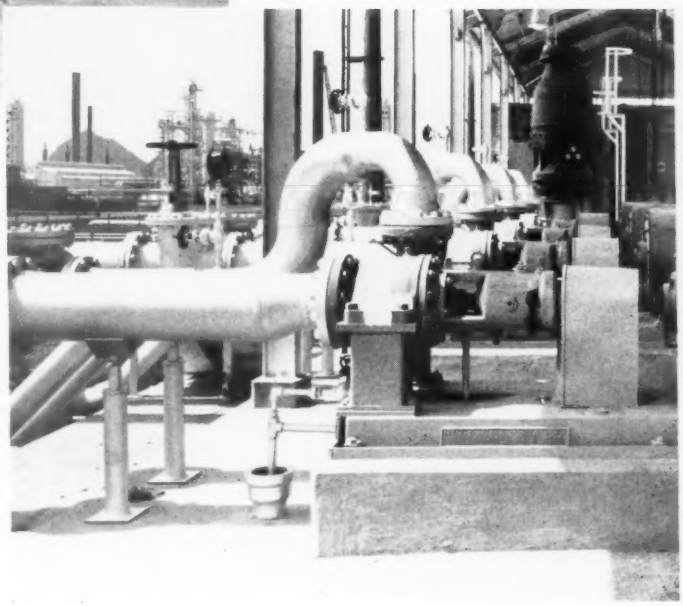


Aden Petroleum Company Refinery



162 Hayward Tyler-Byron Jackson Process Pumps, and 14 Hayward Tyler-Terry Steam Turbines are in service at the Aden Petroleum Refinery. Above can be seen 8 of the 25 Hayward Tyler-Byron Jackson VMT pumps which eliminate the need for underground pumping stations.

Hayward Tyler-Byron Jackson high pressure Pipeline Pumps have recently been installed to handle a flow of one million tons of petroleum products per year on the Trans-Iranian pipeline.

Above is a group of Hayward Tyler 6×8×11 SM process pumps. Pumps in this range have interchangeable spare parts, a feature which greatly reduces the quantity of necessary replacements to be held in stock.

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transport and stimulated trade between often widely
isolated centres of population. In the vital
contribution the airlines are making to
the progress and prosperity of those they serve, petroleum products
are playing their part. Petroleum provides fuel for the machines that
build the landing grounds and the aircraft that use them;
lubricants to keep them running smoothly under difficult conditions;
bitumen for runway surfaces; light for the control
towers of lonely outposts and power for the
busy terminals of the air networks.

But progress is its own task master, generating new and changing demands for oil. Rich in experience, resources and skilled personnel Shell, in all its world-wide operations, is geared to the task and to the responsibility of meeting those demands.

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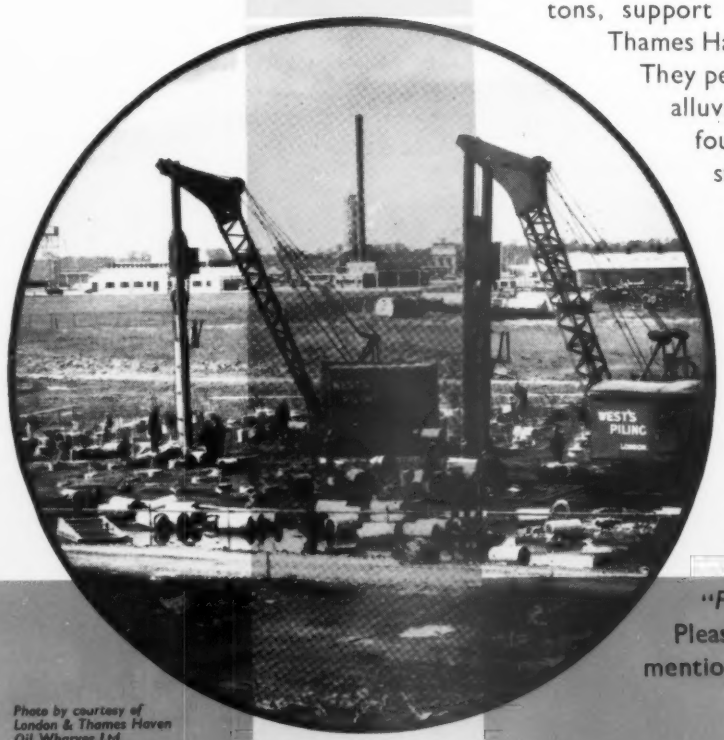

Photo by courtesy of London & Thames Haven Oil Wharves Ltd

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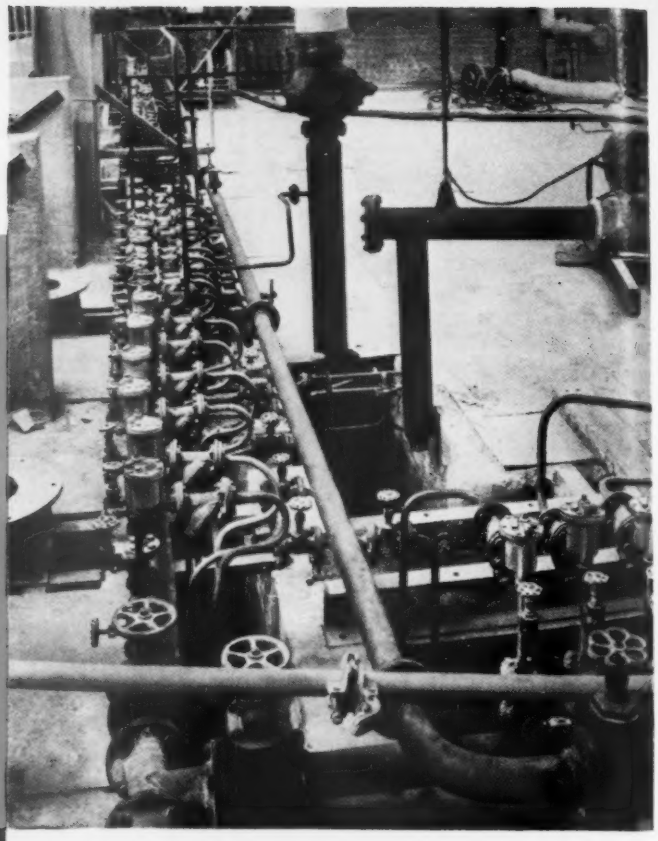

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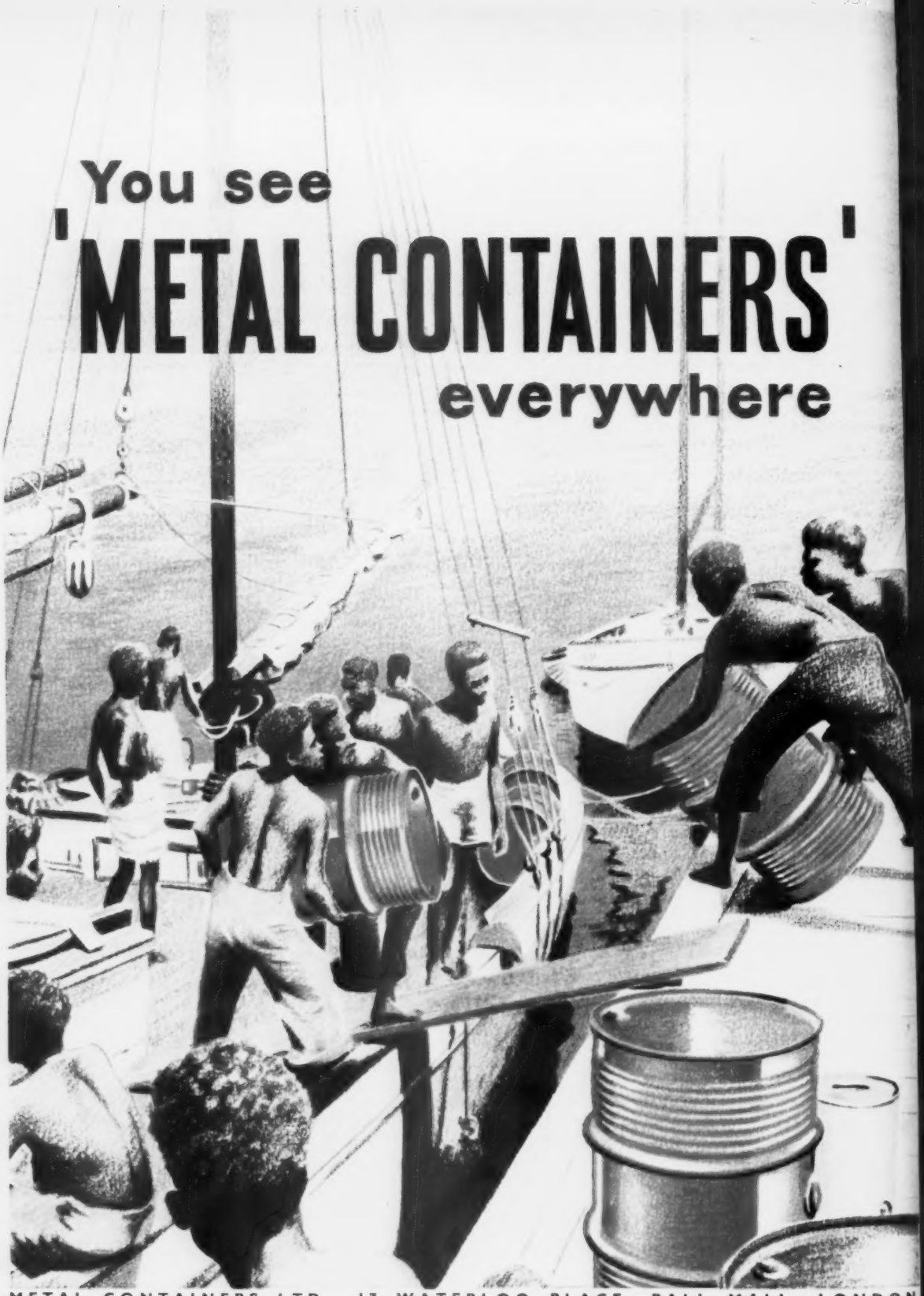

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